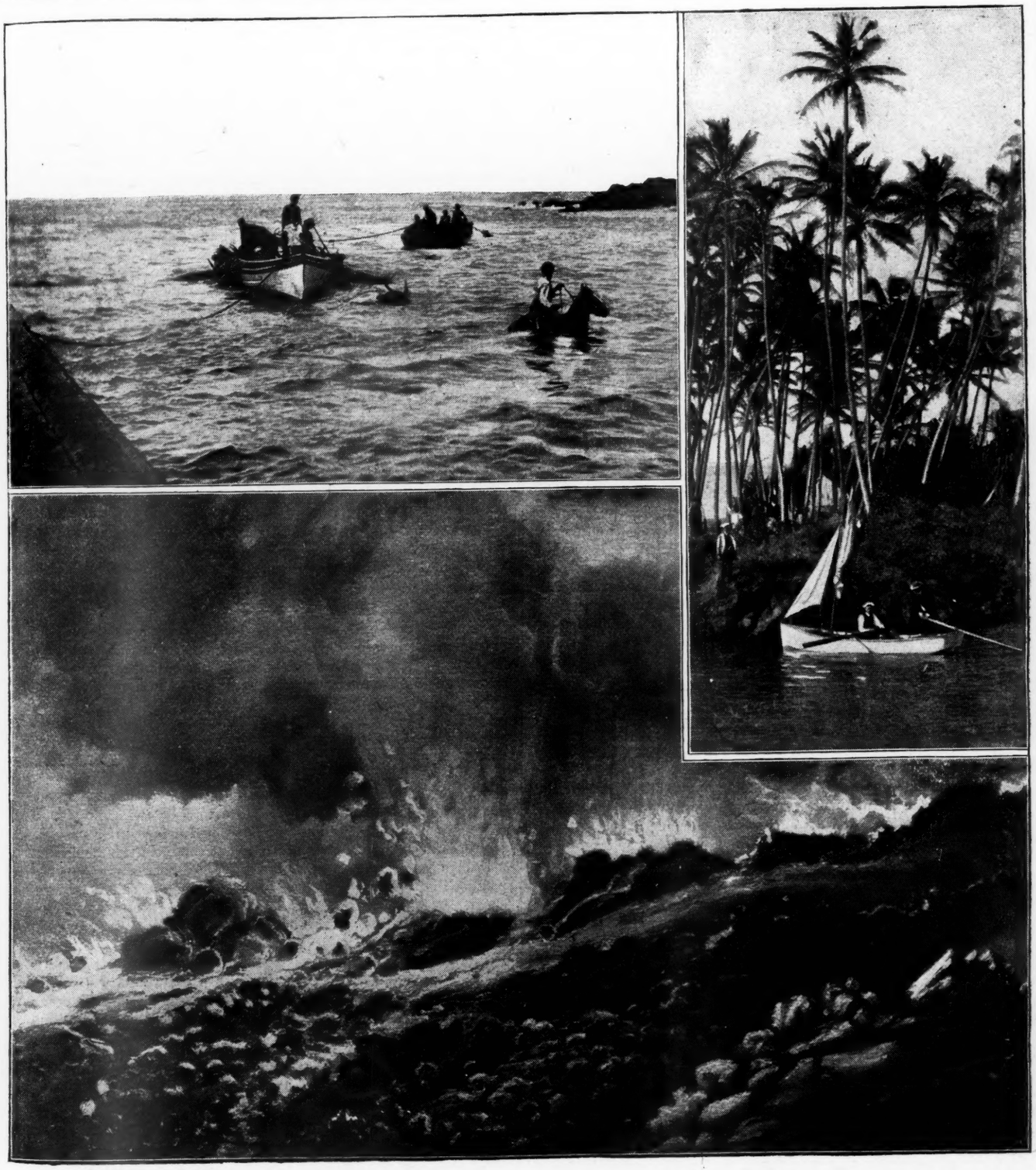
AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME LII.—No. 4. NEW YORK, APRIL, 1893. NEW SERIES—No. 555.



GLIMPSES OF HAWAII, THE JEWEL OF THE PACIFIC OCEAN. (*See Page* 204.)

COPYRIGHT, 1893, BY ORANGE JUDD COMPANY.

THE PROPER APPLICATION AND DISTRIBUTION OF DIFFERENT MANURES.

J. J. WILLIS, Superintendent of Sir J. B. Lawes' Agricultural Experiments, Rothamsted, England.

AGRICULTURE as practiced by the more advanced farmers of the present day, differs widely from the routine of thirty or forty years ago, various kinds of purchased cattle food and artificial manure being now largely used. These comparatively modern practices, although tending to increase the amount of manurial matters on the farm, frequently lead to a very unequal distribution of them. Hence it may often happen that, while the crop in one field may be suffering from a relative deficiency of certain constituents in the soil, these may exist in the adjoining field in relative excess. The uncertainty of effect often observed in the action of artificial manures, is doubtless frequently due to the disturbance of the proper balance of constituents requisite for healthy growth, the result of injudicious management, during the previous course of cropping.

For instance, how different must be the condition of the land in regard to the immediately available supply of certain mineral constituents, after a root-crop grown by artificial manures, and removed for consumption in the yards and feeding sheds, and after one grown by dung and consumed upon the land, with or without other food in addition. How different must be the action of nitrate of soda, or other nitrogenous manure, upon the succeeding grain crop in the two cases. It is true, say Lawes and Gilbert, that the field which has suffered this temporary exhaustion, will, under a system of liberal farming, be duly replenished in the course of time. But, on light soils more especially, the injurious influence of such irregular distribution of the constituents of manure must frequently be felt, and it may sometimes result in serious losses to the farmer. The constituents of manure form a part of the floating capital of the farm; but they yield no interest so long as they do not contribute to an increase in the produce of the land. A certain proportion of them enters into the grain and meat which are sold off the farm; another portion remains in the straw, roots, and fodder crops, in due time to be returned again to the land in the form of manure, and a third portion remains in the soil to be taken up by future crops at a more or less distant period. It is clear that the farmer should endeavor so to arrange his manuring and cropping, that the greatest possible amount of manurial ingredients should be engaged each year in the promotion of vegetable growth.

The Adaptation of Different Manures to Different Crops.—Any rational and economical system of manuring, must obviously be based upon some knowledge of the effects of the different kinds of manure upon the various crops when they are grown in the ordinary course of cultivation. It is true, that science is not at present able fully to account for the characteristic and powerful action of certain constituents of manure upon the growth of one kind of plant, and not of another. Some writers have therefore denied that such a difference of effect exists. The very different effects of ammonical salts or nitrate of soda upon the graminaceous crops such as wheat, corn, meadow-grass, rye-grass, barley, etc., on one hand, and on the leguminous crops such as beans, clover and alfalfa, on the other, may be taken to illustrate the point. The records of nearly fifty years of experiments at Rothamsted, have not afforded a single instance in which the application of ammonical salts or nitrate of soda, to a cereal crop has failed to give a greater or less increase of produce. This is the case even where there has been a very unusual exhaustion of mineral ingredients; and this effect of nitrogenous manures is quite consistent with that observed when such crops are cultivated and manured according to the ordinary course of practice. On the other hand, experiments with leguminous crops, such as clover and beans, as well as practical experience with such crops, show no such result on the direct application of nitrogenous manures. Yet there is a much larger amount of that important element, nitrogen, in a leguminous than in a graminaceous crop. It is, in fact, bad practice to apply Peruvian guano, nitrate of soda, or ammonium salts, to a bean or clover crop, and where barnyard dung is applied both to the wheat and bean crops, true economy would suggest that the rich oil-cake dung be employed for the wheat or corn, and that which is poorer for the beans and clover.

Supposing, instead of this, ten tons of rich dung containing 0.8 per cent. nitrogen (equal to nearly one per cent. of ammonia) were applied in the autumn to an acre of clover to be mown the following year, and ten tons of poor dung containing only half that amount of nitrogen were applied per acre for the growth of wheat, the clover would be manured with about 180 pounds of nitrogen, equal to about 218 pounds of ammonia, and the wheat with only 90 pounds of nitrogen equal to about 109 pounds of ammonia. The nitrogen, or ammonia, applied to the clover has comparatively little effect upon either the quantity or the quality of the produce; and as ammonia is worth about twenty-five cents per pound, there is, of course, in the case of such manuring, a very unprofitable outlay of capital. If, on the other hand, the rich dung had been applied to the wheat or corn crop, the additional 90 pounds of nitrogen equal to 109 pounds of ammonia would probably add many bushels of corn to the produce of the immediate crop. Upon all the lighter soils where experience has established that it is advantageous to use dung for wheat, or corn, the best qualities of it should be devoted to those crops. Upon the heavier soils the best dung should be applied to the root-crops.

It would be impossible to define the exact qualities of land on which it is advisable to apply dung for the grain crops. The experience of the district is generally a pretty good guide. It is, however, only upon the lighter soils that the practice prevails. On the majority of the soils of England, dung can be applied to greater advantage to other crops, particularly to roots, and when this is the case, the cereal crops may be grown by the aid of artificial manures.

Where roots are grown upon heavy land, one of the beneficial effects of the use of dung is that of lightening the soil. For the leguminous crops (beans, alfalfa, clover, etc.), basic slag, or gypsum is strongly recommended. Peruvian guano, nitrate of soda, sulphate of ammonia, superphosphate of lime, kainit salt, and basic slag, are the most important artificial manures, and used either separately or in combination, in the majority of cases, supply what is necessary of plant-food, in addition to the home manures, to obtain luxuriant crops.

CAUTION IN SPRING PASTURING.

E. R. FLINT, MICHIGAN.

Nothing is gained, and much is lost by turning cattle and sheep out to graze before the pastures are well started in the spring. Many farmers, as soon as a few green blades appear in the fence corners, think it a saving of hay, of which their supply is probably running low, to turn out the sheep and cattle, and, as a consequence of so doing, the grass, which in a few days more would have given a good bite and have obtained a fine start, is eaten down so close that the pasture is soon bare, receiving a check from which it will not soon recover.

Keep the stock in the barnyard until there is good grazing, even though the days be warm and the grass growing nicely. The cattle are anxious to be out, of course, and evince their uneasiness by numerous lowings and efforts to get out into the fields; but a few days longer will make all the difference between a well started pasture that will keep ahead of the stock, and one that is soon eaten short. It is, moreover, a bad plan to turn cattle out while the ground is quite soft, as the damage caused by their hoofs will not be easily repaired.

In the early spring days, cattle and horses are often running and playing about the fields, over pastures and meadows, alike, and their owners evidently do not realize the damage they are doing to the grass roots by cutting up the sod. Keep up the grain ration of all stock until the grass is sufficient for a full feed, and even then it should be gradually withdrawn from young stock, and dairy cows in milk should receive a grain ration at least once a day all summer. This will pay. The grass is rank and succulent and the cows eat it greedily, but it does not contain the elements for the production of butter fats which the grain does, and, although the cows may give a full yield of milk on grass alone, it will be found upon trial that the extra cost of the grain feed will more than be repaid in added cream and butter.

A personal experience in stopping the grain ration of young stock as they were turned out to pasture cost the writer dearly. A bunch of winter calves dropped from October to January were in fine condition when spring came, being, without an exception, sleek

and fat. They were turned out about the middle of May on good pasture with free access to water, but their grain ration of ground oats, bran and corn meal was stopped, not being considered a further necessity. A change was soon apparent in their condition. They became thin in flesh, rough coated, and in every way inferior to what they were when first turned out to grass, and, although when the change was noticed, everything was done to bring back their former condition they did not fully recover from the check to their growth which they received from suddenly taking away their winter rations. Since then the change from grain and hay is very carefully made with young stock, as with a choice heifer or bull calf the arrested development can never be fully repaired. The same result will follow with colts, and many an undersized, scrawny looking horse owes its present condition to its owner's carelessness in allowing it to run down for want of a little grain. "Penny wise and pound foolish" was never better illustrated than by the man who stints his growing stock in their food.

PLANTING FRUIT TREES ON PRAIRIE SOIL.

C. B. ROCKWELL, ILLINOIS.

In the extreme western part of Illinois, upon the bank of the Mississippi river, the soil is clay with sandy subsoil. Here I planted my first orchard of forty acres in 1864, and have been planting ever since. At first I planted by hand with a spade; now I prepare the ground thoroughly with teams, plow, disc harrow and drag. If you cannot plow and subsoil all the land, prepare at least a strip six to eight feet wide and plow it twelve to fifteen inches deep. Have the soil in the best possible condition, when ready to plant.

Mark off thirty-three feet each way with a large plow, and plant the trees where the marks cross. Thorough preparation is the first thing, and the next is good trees. The roots must not become dry. I put the trees in a large barrel, putting water and some soil upon them. Drive between the rows, planting two rows as you go along. In this way a man and boy can plant, in first-class order, thirty trees per hour, or three hundred trees in a day. Twenty years ago I thought it best to plow orchards late in the fall, but after losing many trees from late plowing and extreme cold, I gave it up.

After the trees are five to six years old, they are mulched by sowing Mammoth clover, cutting the first crop, letting it remain upon the ground. The second crop is let alone. All the clover rots upon the land. It keeps the ground moist through July and August, covering and protecting the roots through the winter. When the ground is bare in July and August, the trees suffer for the want of moisture, making it impossible to perfect their buds for a crop the following season. A fruit tree must be fed and watered to give the best results.

I have been spraying my trees and vines for four years, and find that it pays. Do not make the mixture too strong. One pound of London purple to 180 or 200 gallons of water is strong enough. Three pounds of sulphate of copper, three of lime, to forty gallons of water, will prevent grape rot. The pump should have great force, and a nozzle that will make a very fine spray, as much like a mist as possible. In large drops the solutions are apt to burn the tender leaves. Spray as soon as the fruit is formed. Any one can as certainly grow first-class fruit by spraying as fruit of the second or third quality.

GROWING SEED POTATOES.

E. S. TEAGARDEN, IOWA.

Before planting the seed have the soil in the best possible condition and liberally enriched with manure. Choose seed large or medium in size, smooth, and of best form. Cut in large pieces and plant in rows three and one-half feet apart each way—four feet each way will be better. Plant about four inches deep. Three or four days after planting, cultivate by turning the soil to the row. One or two days later harrow until all is leveled and made very fine. As soon as the plants make their appearance, cultivate again, turning the soil to the plants so as to cover all weeds that may have started to grow. When the plants are about four inches above ground, thin out to one stalk in a hill. Continue the cultivation twice each week, going both ways each time, until the vines cover the ground. Cultivate shallow to avoid breaking the roots.

The best selection for seed will be from those stalks that produce the largest amount in weight. The most prolific stalks are the best to select from. A stalk that bears a large number of tubers of good size and form will make good seed. The improvement of the potato crop in yield and quality lies in the line of improvement of seed. An observance of this principle has produced wonderful results. Strict conformity to these principles for all farm crops will produce as wonderful changes. Improvement of seed must precede improvement of the general crop.

A WORTHY EXAMPLE.

C. L. ALLEN.

To study carefully the methods of the most successful farmers, and to adapt them, as closely as may be practicable, to our own conditions, is one of the surest ways to make farming pay. One of the most noteworthy instances of profitable farming with which I am personally acquainted is that of G. W. Hallock & Son, near Orient, Long Island. Their farm consists of eighty-five acres, and was bought by the firm for $100 per acre. The soil is of excellent quality, and the climate of the locality is particularly favorable for the production of all kinds of garden truck. Everything on the place is conducted in a strict business manner; accurate accounts are kept so that the exact cost and returns for each crop may be ascertained, and to enable the proprietors to grow only such kinds of vegetables as prove most profitable.

The first outlay after the farm was purchased was for ashes and stable manure, at the rate of $100 per acre, the price of the land, and the same amount is applied annually. While the firm do not make public their profits, they know exactly what they are, so there can be no mistake as to the earnings of the farm. The exact amount of the products of the farm last year was as follows: 10,000 quarts strawberries, 5,425 barrels early cabbage, 3,150 bushels early potatoes, 3,000 bushels onions from sets, 4,650 bushels late potatoes, 12,000 bushels carrots, 8,000 bushels onions from seed, twenty bushels white beans, 175 barrels Hubbard squash, three tons Hungarian hay, 100 bushels onion sets, 150 bushels Brussels sprouts, forty pounds carrot seed, 150 pounds onion seed, 1,500 bushels ear corn, 275,000 cabbage plants to carry over. This gives for each acre of the farm as follows: 172 quarts strawberries, 134½ bushels potatoes, ninety-three and one-half barrels cabbage, 189½ bushels onions, 203½ bushels carrots, twenty-five and one-half bushels corn in the ear, three barrels Hubbard squash, two and one-half pounds onion seed, two and one-half bushels Brussels sprouts, 47,500 cold frame cabbage plants to carry over, besides the few smaller items in the aggregate list. As the prices of these crops are well known it is an easy matter to see whether that farm pays. Major Hallock here makes no mention of the live stock, poultry, etc., that get a large proportion of their living from the farm.

This produce is shipped to Boston in their own steamer, built expressly for the purpose, and, returning, is freighted with manure for the farm. The farm is allowed no rest, but a rotation of crops is kept up, and much of it is cropped twice in the season. This farm is justly celebrated for its enormous annual productions; but it is the farmer that is entitled to the praise, as the farm was no better than hundreds of others, near by, and the enormous crops, are the result of untiring industry, judiciously and systematically applied.

TOBACCO CULTURE.

JAMES K. REEVE.

Within a few years past it has been found that tobacco could be profitably cultivated over a much greater extent of territory than was formerly supposed. Once it was confined almost wholly to the Southern States and to limited areas in the Connecticut valley and Pennsylvania. Now Pennsylvania stands third in production of all the States in the Union, while tobacco is cultivated largely in Western New York, Southern Ohio, Indiana, Illinois, Wisconsin, Missouri and other States.

Where soil and climate are suitable, no crop of general cultivation can outrank this in money value per acre, and for that reason it is a favorite crop for putting out "on shares." The labor of preparing the crop for market is very great, but most of that work is done in the winter when time upon the farm is of the least value. The best soil for tobacco is a sandy loam, rich, warm, deep and well-drained. No matter how good the surface soil is, unless it is deep and has good drainage it will be worthless for tobacco, which is a tropical plant and cannot grow if its roots are damp and cold.

For a good tobacco crop, good plants are a first requisite, and to have these there must be a good seed-bed. This should have a warm soil, not too dry, in a position where it will be sheltered from the cold winds of early spring, yet receiving, unobstructedly, the rays of the sun throughout the day. Make the bed rich by apply-

ing reliable commercial fertilizers, or by working in fine, well-rotted manure, and put it in the best possible mechanical condition before sowing the seed. A heaping tablespoonful of seed is enough for each square rod of bed, and should be sown carefully, a little at each cast, so as to get a perfectly even distribution. Roll the bed after sowing so as to get the seed well pressed in, as well as to prevent too rapid drying out of the fine surface soil. Water the bed afterward whenever the necessity is indicated.

The plants should be ready to set about June 1st, or after all danger of frosts has passed. The ground upon which they are to grow should be prepared with no less care than the seed bed. The best finish to the ground can be given by rolling, as tobacco needs a certain compactness of soil to retain the moisture which is essential during the early stages of growth. Plants should be set about two by three feet apart, depending somewhat upon the variety, and always in soil that has been freshly worked and that consequently is moist upon the surface. Cultivation consists in keeping the soil loose, and absolutely clean, until the plants are so large that they cannot be worked longer without injury to the leaves. When the plant is nearly grown the stalk reaches a point where it suddenly grows smaller, and then tapers to the bud which is to form the blossoms and seed. Just at this point the stalk should be cut, or topped, so that the strength of the plant shall continue to go into the leaves. The plants should ordinarily stand about three weeks after topping, but may remain longer if continuing to grow, and not in danger of frost. Then cut with a hatchet close to the ground, lay it down and let remain until wilted so that it may be handled without breaking the leaves. In hanging the tobacco in the shed it should be so spaced upon poles or laths that the plants do not crowd upon each other, and the poles should be far enough apart to permit the free passage of air between them. A beginner in tobacco growing should not attempt more than an acre or two at the outset. Experience is needed in handling tobacco after it is grown, and a fine crop can easily be ruined in the shed, by too much light, or by an atmosphere either too dry, or too moist.

Fig. 1. VIEW OF THE KAMEHAMEHA COLLEGE.

Fig. 2. THE VOLCANO RAILWAY.

Meadow Foxtail.—In seeding for permanent pasture, about one-eighth of the seed should be meadow foxtail (*Alopecurus*). This is not the troublesome weed (*Setaria*) called foxtail, but a most valuable grass relished by cattle, and very nutritious. It is three or four years in reaching maturity, as the more permanent a grass is, the longer time it takes to attain its full growth and sod.

OUR NEW TERRITORY—HAWAII AND ITS BOUNTIFUL RESOURCES.

HERBERT STANLEY RENTON.

In the midst of the Pacific ocean, about three thousand miles due west of the city of Mexico, and two thousand miles southwest of San Francisco, are situated the fire-built isles of Hawaii, the Sandwich islands. The twelve islands—eight of which are inhabited, and four uninhabited—contain an area of 6,677 square miles, which is a little larger than Wisconsin. The population is 90,000. Of these about 34,000 are natives, 15,000 Chinese, 12,000 Japanese 8,000 Portugese, and the rest half-castes, American, English, German, and others. The islands are, in reality, summits of volcanoes whose sides extend many thousand feet below sea-level, and the loftiest reach ten thousand feet into the air; consequently, all the climates are found, from eternal summer on the coast of Hawaii, up the giant mountain sides, through all the temperatures of the torrid and temperate zones into Arctic colds and everlasting snow on the peaks of Mauna Loa and Mauna Kea. Being in the belt of the trade winds, one side of the islands is deluged with rain, and on the other, but a few miles distant, it never rains from century to century. Very recently the volcanic soil consisted of rivers of molten lava, now disintegrated and overgrown with the luxuriant foliage of the tropics, fields of sugar cane, and rice, bananas, and other fruits. There are groves of cocoanuts, and oranges, mangoes, and apples. Roofs and verandas are covered with *Bougainvillea venusta*, passion flowers, and starry clematis. Everywhere are seen the stately royal palm trees, with pepper trees, blood dragon trees, feathery tamarinds, magnolias, eucalyptus, and even pine trees. The bread fruit tree produces all the Sandwich Islander needs. He obtains food from its fruit, clothing from its bark, and its trunk will build his hut and canoe. The gardens glow with color. There are yellow and scarlet hibiscus, white trumpet flowers, golden alamandas, perfumed gardenias, rosy oleanders, white lilies, night-blooming cereus, passion flowers, heliotropes, geraniums, and roses, all blooming in luxuriance the year around. The people, as well as the gardens, are decked with flowers, necklaces and garlands being worn in great profusion. The central table land of the island of Hawaii—the largest of the group—six thousand feet above sea level, is one of the most fertile regions in the world. This paradise of the Pacific is not surpassed for the raising of tea and coffee, tobacco, raisins, oranges, bananas, various fiber plants, and a great variety of delicious tropical fruits. Sugar cane averages four tons of ninety-degree sugar to the acre, with occasional yields of even seven tons. Two crops of rice are gathered yearly, and occasionally three, yielding about four thousand pounds per acre. Sugar is the chief article of commerce. A few fields of tea have been raised for experiment, with promising results. The quality of the tobacco is fully equal

to that of the famous Sumatra leaf, but the industry is neglected, not enough being raised for the home market. The coffee produced is of very superior quality, being fully equal to the finest Mocha. It sells in the London markets at the price of the choicest Ceylon coffee. Some of the wild apple orchards on Hawaii are the largest and most beautiful in the world. The tall trees are loaded with ripe fruit from July to September.

The capabilities of the Islands may be said to be practically undeveloped with the exception of the sugar industry in which the limit of yield has been nearly reached. In the year 1875 a treaty of reciprocity was made between the United States and the Hawaiian islands, the principal feature of which was the admission of Hawaiian sugar free of duty to this country. As the Islands could not produce more than one-tenth of the sugar imported by the United States, the remission of duty was equivalent to a bounty of two cents per pound on the island product. The sugar industry became very flourishing, and was developed by a few Americans. In fact, the business of the Islands is largely conducted by people who went there from the United States. One of the largest sugar plantations is on a sandy plain, which was, ten years ago, an arid desert with scarcely a tree, or a blade of grass. Here can now be seen green pastures, beautiful flower gardens, avenues of trees, and twelve thousand acres of growing sugar cane, from which one hundred and twenty tons of sugar are made in one day. This great change was brought about by constructing reservoirs in the mountains, from which the water was brought in pipes to the plantation. Many tunnels were cut through solid rocks, and in some cases for a distance of five hundred feet. There are many sugar plantations, however, in the rainy regions.

The roads through most of the country districts are in better condition than the average country road in the United States. Honolulu, the largest city, has thirty miles of streets, macadamized with crushed volcanic rock pressed down by steam rollers. It has also about sixteen miles of street railway. There are water works, electric lights, telegraphs, telephones, steam fire engines, libraries, public schools, and many other conveniences of civilization. Railroads convey the produce from the interior of the islands. Every Hawaiian can read and write in his own language, and the children are taught in English, as well. The Postal Savings Bank system is a successful institution on the island, and is very generally patronized by the inhabitants, over one-half million dollars being deposited annually. The silver dollar is identical in size and weight with the American dollar. On one side is a medallion of the late king, and on the reverse is the motto in the Hawaiian language, "Our Land is Established in Righteousness."

Missionaries went to the Sandwich Islands in 1820, finding the inhabitants in a state of semi-civilization, but retaining some relics of barbarism. The people were in abject slavery to cruel chiefs and fierce priests, who called for thousands of human sacrifices. There were endless feuds between petty chiefs, and no one was sure of his life for a single moment. The chief, or priest, had but to point his finger at the objectionable subject, and his brains were dashed out, and his body carried to a stone temple and offered as a sacrifice to the gods of the volcanoes. But the Sandwich Islands are now a civilized nation with an intelligent Christian populace. The country is dotted with schools and churches, which carry on a ceaseless warfare, not only against the remnants of barbaric evils, but also against the vices of our civilization carried to the islands by the sailors, and others. If the Islands were well governed and properly developed, the fertile soil would sustain many times the present population. A species of colocasia, called taro, is much raised by the natives, and the indolence of the islanders is to be chiefly attributed to the fact that it needs, practically, no cultivation. A patch forty feet square will produce enough for the support of a native for one year. The natives, who belong to the Polynesian race, are still in the ascendency. Many Chinese have come to cultivate the sugar plantations. There are extensive ranches for the raising of sheep and cattle to supply ocean-going vessels which stop at this port. The two harbors of Honolulu and Pearl City are about six miles apart. They are entered by narrow channels and are almost fortified by the precipitous mountains. There are many promising fields open to the industrious who are willing to till the soil and wait patiently for the fruitful crops. Although an acre of land will raise about 5,000 pineapples each year, only a few are cultivated. The business of drying and canning fruit could be made very profitable. Many of the timber and cabinet woods are valuable. There is not a month of the year when the supply of limes equals the demand for home consumption alone. Each steamer from Samoa brings quantities of this fruit which can be grown readily on the Islands. On Hawaii alone there is a stretch of land forty miles in length on which bananas may be cultivated in quantities sufficient to load a steamer of 1,000 tons, every month. The populous Pacific Coast of North America is now dependent upon

Fig. 3. MIDWINTER SEA-BATHING AT HILO BEACH.

Fig. 4. LEPER SETTLEMENT AT MOLAKII.

the Sandwich Islands for its supply of cane sugar, and will naturally take the needed tropical fruits from the same source. Although the land is not abundant, good homestead claims are offered by the government and by the crown land estate. When the farmer has located his land, about one-quarter of it should be immediately planted to coffee and another fourth to limes and oranges which grow rapidly and will begin bearing in three or four years. Ten to twenty acres in fruits are as much as any one man can raise properly. The Hawaiian Islands are neighbors to the United States rather than to Asia and their diversity of climate should lead to such a diversity of crops as will make them not only the Sugar Field, but also the Tropics, of the Pacific slope. [Our illustrations, engraved from photographs taken by Mr. Herbert Stanley Renton, show, on preceding pages, the Kamehameha College for natives in Fig. 1, the Volcano Railway in Fig. 2, the Beach at Hilo in Fig. 3, and the Leper Settlement at Molakii in Mauna Loa, Fig. 4. Our frontispiece presents a view of the Kilauea crater of the volcano in eruption. In the upper view cattle are being landed from a ship to one of the Islands. At the right is a cocoanut palm grove.]

RAISING TURKEYS FOR MARKET.

ELLA ROCKWOOD, MICHIGAN.

On the average farm, a turkey costs no more for food consumed than a chicken, and at the time of marketing brings certainly twice as much, and often more. I have stopped raising chickens for market, and devote all my efforts in that line to turkeys. Turkeys are more tender and delicate when first hatched than chickens, but if they live for four weeks, they are afterward easily reared.

The Bronze are, perhaps, the most satisfactory to raise, being hardier and surpassing all other breeds in weight. The best way for a beginner is to buy a male and two females of some reliable dealer, or neighbor. If not pure bred, they will, at least, do for one season until the pure bred ones may be obtained. The alternative of buying eggs, and setting them under a hen may be practiced. If the birds are purchased, they should be made acquainted with their new surroundings early, that they may become contented and at home before the laying season begins.

Turkeys begin to lay about the first of April. Care must be taken to find the nests, as the eggs must not be allowed to chill. A hen's egg left in the nest will prevent their taking alarm and leaving the nest. Set the first laid eggs under a hen, not allowing the turkey to sit on them. She will soon begin laying again. She should be allowed to hatch out the second laying of eggs, and when the little ones are old enough to range the farm for plants and insects, they will all run together.

The greatest danger to the little turkeys is lice, and it is safe to say that in nine cases out of ten that is the cause of their death. The nests should be well sprinkled with sulphur two or three times during the period of incubation. The heat of the hen's body will then cause sulphur fumes, which are too powerful for the mites. A handful of coarse tobacco in the nest will answer the same purpose. When the time for hatching arrives, examine the eggs frequently, in order to assist the little prisoners out of the shells, if it should be necessary. The shell sometimes becomes so dry that the inner lining fastens to the little turkey, and it has not strength to break loose and come out of the shell. It is well to remove them from the nest, in order to keep the mother bird quiet during the day, otherwise, she may leave some eggs unhatched. Always return them to the nest for the night.

For the first twenty-four hours the young turkeys need no food. After that, feed generously with bread which has been dipped in hot milk, then squeezed dry and sprinkled with black pepper. This should be their only food for the first few days, unless you wish to spare some eggs for them, in which case boil them hard, chop fine, and mix with the bread and milk. Scalded sour milk curd is a good food, but the bread and milk is sufficient for the first ten days. They may then have cracked wheat, or corn meal, if it is baked into a cake. Corn meal should not be fed wet as it is sure death.

Give the young turkeys all the milk, or water, they want to drink. Place it in a shallow dish so they will not get wet or chilled. Little turkeys must not be allowed to run out in the wet grass, or to be out in a rainstorm until their quill feathers are well grown. Dampness is fatal to them for the first few weeks. After they are a few days old, sprinkle occasionally with insect powder. When they are gathered around the feed dish is a good time for this. Give them a generous sprinkling to keep off lice. If one is noticed with drooping wings, giving out mournful chirps, catch it and you will find it is lousy. Grease thoroughly with lard, or sprinkle with insect powder and keep closely covered for a little while, and, if not too far gone, it will come out all right. At the root of the wing feathers is where you will find the lice.

When once started, turkeys grow very rapidly. Feed generously, night and morning, and they will roam the fields for insects during the day, doing more good than harm to growing crops. Fatten them on corn in the fall. It is often best to keep them until after the holidays before marketing, as many are sold at that time in the expectation of getting the highest prices.

CARE OF SPRING CHICKENS.

April is the month of peepers. Everywhere the downy chick's voice is heard.

The newly-hatched chicken is a delight to a child but a source of anxiety to the poultry raiser.

He knows, what the child does not, that these balls of down have many ills to contend with, and to enable them to successfully combat these ills he must provide the necessary care.

First of all, having made beforehand a coop for the hen, he waits until the chickens are twenty-four hours old. Up to that time they need and they get no food. They are digesting the remains of the absorbed yelk.

When the time has arrived he takes each tiny chick from the nest and greases the top of its head with a bit of unsalted butter or fresh lard about the size of a pea. This is a precaution against the large louse that infests the head and often kills the chickens.

He then removes the hen and her brood to the coop that he has previously prepared. On the wooden bottom, raised an inch or two from the ground, he has sprinkled a little air-slaked lime, over which he has placed a covering of dry earth to the depth of an inch or so. The lime and the earth help to keep the coop sweet.

Now he is ready to give the chickens their first feeding. This consists of wheat bread crumbled very fine, on which as much sweet milk has been poured as it will readily absorb. He may, too, have boiled one of the clear eggs removed from the nest, chopped this very fine, shell and all, and stirred it in with the bread crumbs and milk.

Then he brings out a small fountain, filled with clean cool water, and sets it out of the sun, where the chickens can drink as they wish to, and where also the old hen can obtain her supply of water at will. Five times each day, during the first week, the poultry raiser repeats this operation. In the morning, in the middle of the forenoon, at noon, in the middle of the afternoon and at night he attends to these duties. At each visit, the water fountain is cleansed and refilled, and the prepared food is provided. Just as much as the chickens will eat up clean, with nothing left over to waste and sour, is given at each meal.

At the end of a week or ten days, he again greases the head of each chick, dusts each little body with insect powder, does the same for the hen, cleans the coop, puts in a new supply of lime and dry earth, and prepares to make a change in the diet. From the barrel of cracked corn he takes a quantity and runs it through a fine sieve. The coarse part is reserved for the hens, the finer part for the chickens. To this very finely cracked corn, he adds an equal part of steam-cooked dry oatmeal, and about one-half as much ground beef scraps as there is oatmeal. These are thoroughly mixed together, without the addition of any water. At noon, the chickens have this mixture instead of their bread and milk. In a few days more two meals of the mixture are given, and, at the end of ten days after it is first begun, the bread and milk is wholly discontinued and this mixture forms the sole food.

But this mixture is soon to give way to another. Just so soon as the chickens will readily eat whole wheat, and this is by the time they are four to six weeks old, the following mixture is prepared. One part sound wheat, one part dry oatmeal, one part fine, cracked corn and one part beef scraps, fed dry. This is given five times daily or, if not convenient to feed so often, is fed but three times daily, the feeding being a little more liberal in quantity. And this food is continued during the growth of the chickens, with the exception of using coarser cracked corn as they increase in size.

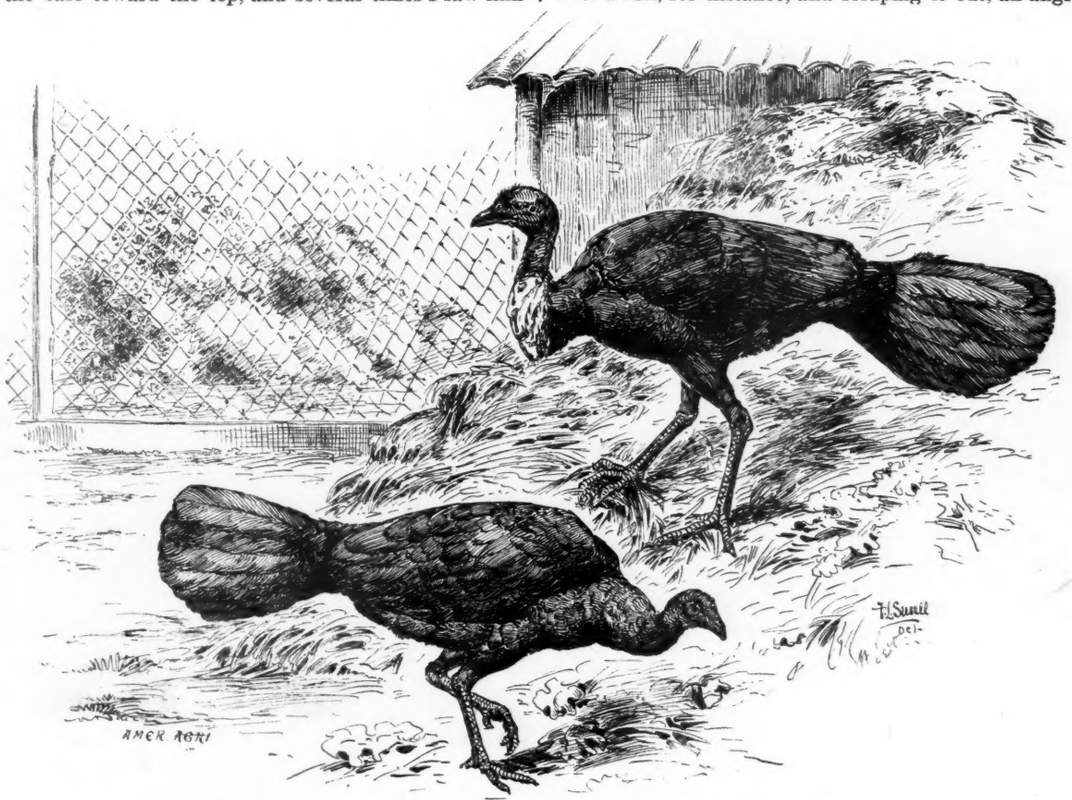
Grit in some form, as cracked bone, oyster shell, broken flint and the like, is kept constantly within reach of the chickens, and if the raiser be a very careful man, a box of charcoal is also provided. The chickens are kept where they can help themselves to green grass, or what is better, clover. When they cannot have a grass run, they are supplied with tender grass or some green substitute, cut fine at the start and fed in such quantities as may be needed.

THE BRUSH TURKEY.

FRANKLANE L. SEWELL, ENGLAND.

In the zoological gardens of London the Brush turkey has made its nest, as it does in its wild state, by constructing a crude mound of earth, leaves, grass, sand, and other materials that were at hand, which by fermentation becomes heated. The eggs are deposited therein. Instead of a mother turkey upon her nest, the picture of patience, is to be seen the female in apparent carelessness strolling about the inclosure. The cock seems the most interested, and by far the busier one of the pair. Not a sign of herbage, not even a straw, is to be seen on the ground of their runway except what is contained in the mound. The male bird, for it is he who constructs the mound nest and keeps it constantly in correct condition, has apparently worn and torn every bit of herbage from the ground, in his dragging and scratching materials toward the huge pile, which is about five feet high and eight or more feet across the base.

While I stood sketching these strange birds, the male nervously ran to and fro from the mound, once in a while scratching the materials at the base toward the top, and several times I saw him peek at and drive the female from the place as if in fear she might disturb something. The superintendent of the gardens, in a very interesting account of the Brush turkey, says that when the young are hatched they creep from the mound, stout and strong, ready to care for themselves, and on the second or third day capable of flight; that they are quite unnoticed by either of the parent birds and apparently careless of each other, hunting their own food, and each selecting, regardless of the others, his shelter or roosting-place for the night. It is not unnatural to think that the ancient Egyptians who are believed to be the first to hatch eggs artificially, caught their ideas from reptiles or birds which hatched by means other than from the heat of the bodies.



PAIR OF DOMESTICATED BRUSH TURKEYS.

POULTRY PASTURE.

Provision should be made, when necessary to do so, for a poultry pasture. Fowls that have farm range, find their own pasture, but many keep their fowls yarded, and such fowls need a proper pasture. The green stuff grown may be oats, rye, corn, clover and the like. Of all we have tried we like clover the best. Spade up or plow and harrow the ground, and seed heavily. Use a little special manure on the surface to give the clover a start, and if it can be done conveniently, mow the crop once before allowing the fowls to have access to it. If the fowls are to be soiled, a small patch will go a long way, but if they are to have access to it, a large enough patch to prevent its being scratched and trampled out, should be provided. Clover is preferred to the other green crops, because it makes a quick dense growth, and a heavy crop can be grown on a small piece of ground, because the clover, when fed young, is particularly tender, and is eaten with less waste than many green crops.

RAISING CHICKLINGS.

MISS E. K. WINANS, NEW JERSEY.

Success in raising chicks depends largely upon the kind of coops used. Some excellent plans have appeared in former numbers of the AMERICAN AGRICULTURIST. My chicks have always prospered best in coops with two compartments, an arrangement which has great advantages in bad weather. Above all, the coops should be easy to clean, for fresh air is necessary to vigor in animals. We will find that our chickens grow perceptibly faster when their surroundings are kept absolutely clean, and, since we are weak creatures, wretchedly apt to dodge doing what is disagreeable—stooping over a box, for instance, and scraping it out, an angry hen flying at one's face all the while—it is wise to make allowances for ourselves, and save time and temper by providing coops with movable bottom boards. The coops should have ventilating holes, and wire doors, for use on hot summer nights. Be sure to make the spaces in the slatted doors wide enough for the chicks to run in and out easily, even when they are plump "pounders."

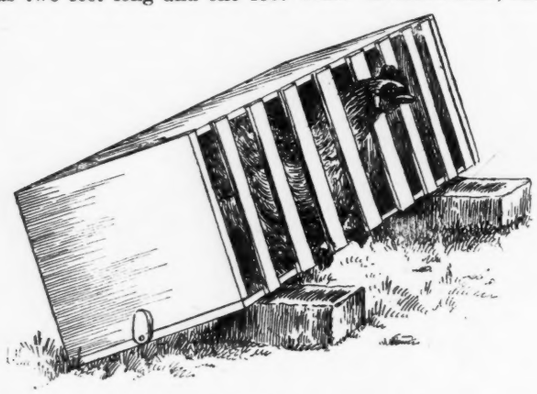
As a rule, it will aid one in the resolution to keep the chicken department clean, if the cleansing be done in the morning, like other housecleaning. It is not a bad way, if the keeper of the vegetable garden be willing, to place the coops of all chickens, under two weeks old along the rows of green peas and radishes. The chicks help the radishes, the radish bugs help the chicks, and, sometimes the cleaner of the coops "hand weeds" a bit, between times. But banish them in good season, for, at two weeks old, the chickens are transformed from beneficent to evil genii. Do not believe, do not let anyone make you believe, that it is not worth while to give young chicks such good shelter and care. Undoubtedly, splendid specimens of poultry have been raised in surroundings very much against them, but so do a few poor, little, dirty babies grow up into strong men and women. Babies, colts, pigs, or chickens, all young things, should have a fair chance.

Chicks hatched in April have great odds in their favor if they are brought up in the fresh air, and will probably make the best layers

next winter. It will be well worth while to have a goodly number of hens then, if eggs bring as high prices as they have commanded this year. For especially good layers, and for breeding birds, the upbringing is the same. Give them a chance to be happy, that is all. Of course this means that they be kept dry and warm, that they be given a good range, and have proper food, at right times, but, at the same time, it is the happiness which makes them flourish. As to feeding, I must urge the young poultry farmers to cook the food for their chicklings and ducklings. It seems to me that the baking pan is the link between young digestions and our great American staple, Indian corn. There is no better standby than "pone" made with as much meat and milk, sweet or sour, as can be afforded. When the milk is sour, add soda, the cake will be more palatable to the chicks, and more nourishing. If this pudding, or other cooked food, is fed four or five times a day, and cracked corn, mixed with coarse oatmeal, is kept within the chickens' reach, they will, in all probability, grow as vigorously as their owners' hearts can desire.

COOP FOR A BROODY HEN.

A useful contrivance for removing the notion of hatching from a sitting hen is shown in the engraving from a sketch by M. E. Brown, of New Hampshire. The top and bottom of the box are boards two feet long and one foot wide. A board door, one foot



AN ANTI-BROODING COOP.

square, is fastened by hinges at one end. The sides of the coop are slatted for ventilation. The broody hen is placed in the coop, the door is fastened and the box is tipped up with blocks on one side so that the hen has to stand up and cannot sit down comfortably. Under these conditions the hatching fever soon leaves the thoroughly discouraged hen, and she is soon laying again.

PNEUMATIC FOUNTAIN FOR POULTRY.

One of the best troughs for supplying fowls with drinking water is made of an empty five-gallon kerosene can as shown in the illustration from sketches by C. H. Riley, of Oregon. A hole two and one-half inches square is cut near the bottom as in Fig. 1. Next cut an empty tin can in two, and about three inches deep as in Fig. 2, and bend the edges in at right angles. With a soldering iron, solder this section of can to the five gallon tin opposite the hole at Fig. 1, so that when the section is fixed on, the hole will be one-half inch lower than the top rim of Fig. 2. The two put together are seen at Fig. 3. The result is that chickens cannot tramp through and soil the water. Five gallons will hold enough for a large flock of fowls, and the drinking pan fills as quickly as they drink from it, and by throwing a sack over the fountain it will keep cool in hot weather, which would be a great advantage in warm climates. It is easily moved from place to place, and is far preferable to open dishes which get so hot in the sun. There must be no holes in the kerosene can, except the one below, or else the water would all rush out, and for the same reason the one hole must be a trifle lower than the top of the tin they drink from. The inventor has found it to act very well, and sends this description, trusting that other poultry lovers will find the contrivance satisfactory.

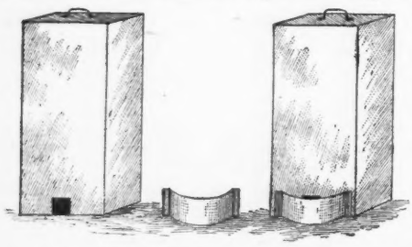


FIG. 1. FIG. 2. FIG. 3.

A CONVENIENT POULTRY HOUSE.

JNO. W. CAUGHEY.

A house that is admirably suited for poultry and is constructed both within and without for usefulness as well as beauty, although

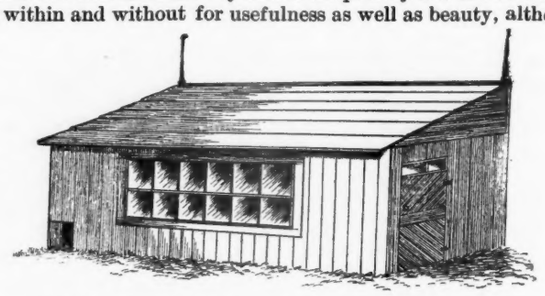


FIG. 1. PERSPECTIVE VIEW OF POULTRY HOUSE.

entirely free from elaboration, is shown in the accompanying illustration, hence its adaptation to the needs of farmer and fancier alike. The building (Fig. 1) is 20x14 feet, twelve feet high in front and six feet in the rear. The lower side faces the south, there being a glass sash twelve feet long to admit plenty of light. The roof is covered with tarred felt roof paper, the sides, ends and floor being built of matched siding. Under the house is a three foot space well provided with dust.

The roost is twenty feet long extending from one end of the house to the other, shown in Fig. 2. It is six and one-half feet from the ground and is three feet wide, being built like a ladder and placed at the north end of the building. Under this roost is placed the drop boards, being slanted sufficiently to cause the droppings to roll down into a box at the bottom. In this way there is no trouble in keeping the house free from bad odor, as the droppings each day are removed from each box and the boards resanded after doing so. I know of no simpler and better plan to adopt in a laying house. In a house of this size, it is better to have four boxes and four slanting boards under the roosts. I do not think many breeders approve of high roosts, but with a board ladder running up to the top of roosts it is easy for the fowls to reach the roosts.

The plan is a good one, and it can only be obtained by having it this height, for a proper drop. A flock so kept will be more healthy, as bad ventilation with foul roosts is often the cause of sickness, to

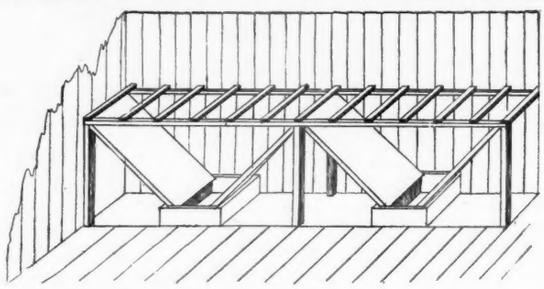


FIG. 2. ARRANGEMENT OF THE ROOST.

say nothing of the vermin that droppings very often attract to a flock while roosting. The drop boards are one-half foot wider than the roosts. Some of the birds will manage to roost on the side rail to which the roosting sticks are fastened. This house will accommodate sixty fowls and as many as eighty-five fowls have been confined in it, yet the smaller number is really the best. The house is lined inside with tar paper. The fowls have no runs about the building. In fair weather they have access to fields about the house; in fact they go where they please.

Clean Eggs.—Do not take soiled eggs to market. A neat, clean lot of eggs looks better, and, though they may sell for no more money, they will sell much more quickly. A quick sale is certainly worth securing. The egg has a porous shell. Examine a piece of it with a microscope, and it will be seen to be full of holes. Through these holes the odors from the dirt that may stick to the egg is liable to penetrate and actually to injure its quality. If, when the eggs are gathered, the soiled ones are put aside and washed, then all will be clean. Keep the eggs where no foul odors are, so that they may be clean within, as well as without. Eggs will taint like fresh meat.

DIAGONAL HARROWING.

WILDER GRAHAM, PENNSYLVANIA.

When a nearly square field is to be harrowed after it is entirely plowed, the work may be efficiently done by diagonal harrowing. [See illustration]. This is specially adapted to working up sod or any ground that it is necessary to drag crosswise of the furrow. Enough time and labor are lost in turning around, to amount to a good deal in a day's harrowing. If we begin on the diagram at *a*, working parallel to *bd* and letting the heavy lines represent the path of the harrow, it is evident that at least fourteen turns will be necessary in going once over the ground, or twenty-eight in twice over; also that after the line *bd* is passed, we come to the fence at an acute angle, making it necessary to turn before driving to the fence, or else to make almost the complete circuit of 360° and turn to the right, or back upon the harrowed ground. With the above method the harrow is started at *a* up the heavy line to *c*. The rest of the course may be best followed by tracing up the heavy line on the diagram. With but fifteen complete turns the ground is harrowed twice and the fence always approached at an obtuse angle; so the harrow may be driven to the very edge and still leave room to turn. Of course with a harrow of ordinary width the central line would be much more nearly parallel to *db* than appears on the diagram, the variation not being noticeable in practical work.

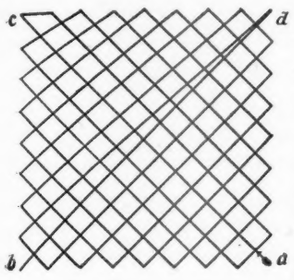


DIAGRAM OF HARROWING.

A CONVENIENT WOOL-BOX.

JOHN BRUMBACK, OHIO.

By using the wool-box shown in the illustrations, one man can tie the fleeces as rapidly as five or six men can shear them. The box is constructed as follows: It is five feet long by one foot broad and deep. The bottom is divided into five pieces, each one foot square. The center and two end pieces are hinged to the two side pieces—as seen in the diagram, Fig. 1, while the two squares, one each side of the center piece are hinged to the latter only, so that they may be raised towards each other and at right angles to the sides. At one end is an upright piece, one foot square, firmly fastened to the bottom. Upon the upper edge of this piece is a spring

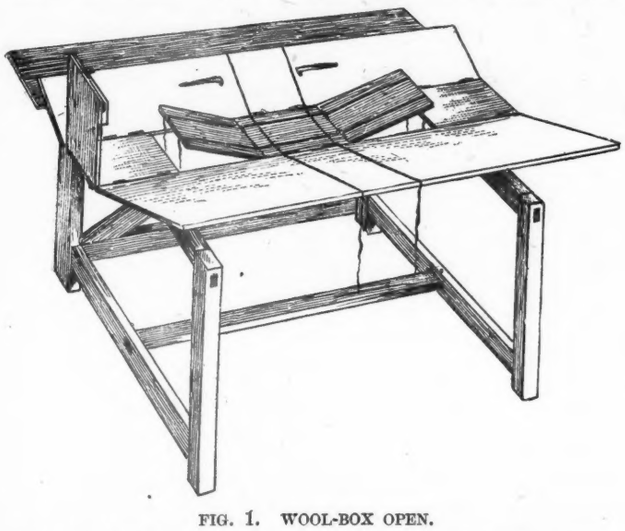


FIG. 1. WOOL-BOX OPEN.

clasp which holds the sides in place when they are raised. The two erectable bottom pieces are held upright, when the box is closed, by springs in one of the side pieces. These springs are made of good strap-iron, and are fastened on with screws. There are holes in the side piece through which the ends of the springs pass while the end pieces are being raised. The clasps on the stationary upright end piece are so constructed that when the knob is pressed down the clasps are raised off the sides, thus allowing them and the movable end pieces to fall back, when, after being threaded, they are ready for another fleece. The frame, or table, is separate from the wool-box. It is four feet wide with a board one-foot wide fastened on the top at the back edge of the frame, shown in Fig. 2. This leaves three feet in front to lay the open box upon. Eight pairs of hinges are used in putting the box together. The bottom pieces of the box are cut from one board five feet long. The movable end pieces should be sawed off diagonally, like a miter joint so as to let the edges rest on the edges of the stationary end pieces and thereby avoid danger of sagging the hinges, and prevent the boards from becoming uneven when the box is open. The twine is laid in grooves cut in the various pieces at proper distances, as seen in Fig. 1. Tying a fleece in this box is accomplished as follows: The fleece

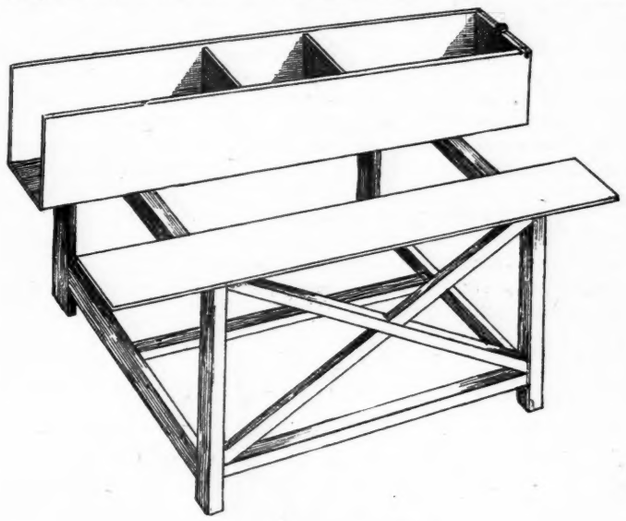


FIG. 2. WOOL-BOX CLOSED.

is placed on the open box lengthwise, shorn side down. The wool is next pushed about as close together as it grew on the sheep, and the legs and belly-fleece are lapped over. Now one side of the box is raised, thus folding one side of the fleece from one end to the other, the other side of the box is raised immediately after, with a like result. The fleece at this stage is rolled up from one end to the center, and the movable end leaf is raised to keep it in place while the other end is being rolled and the last movable end leaf raised, thus forming a square. After this the ends of the strings are drawn tightly over the already compact fleece and tied. Finally, the knob on the stationary end piece is pressed, releasing all the boards of the box, which fall open, leaving on the center piece a beautifully packed, square fleece.

PAPER PLANT PROTECTORS.

T. PAYSON.

Cheap paper protectors for shading transplanted plants from the sun, and to be used as a covering at night from the frost, can easily be made of old catalogues and other pamphlets. Prepare a pasteboard pattern of as large a size as can be cut from the leaves of the catalogues, of the shape shown in Fig. 1. Take the catalogues apart, by removing the threads or wire fastenings. Place six or more sheets together, at least as many as can be cut at once with heavy shears. Mark the top sheet with a pencil drawn round the pattern. Cut the pieces to the line, and repeat till as many leaves are cut as desired. Prepare a vessel of carpenter's glue very hot and about as thick as syrup. Apply the glue to one of the inner edges of each piece, with a small glue-brush, spreading it one-half inch wide. Quickly lap the edges and press firmly together. If the glue is of proper thickness it will instantly firmly unite the edges. This makes a paper cone, which, if of thick paper, will answer for several years' use. I made about 600 of these in the spring of 1891. After using them on tomatoes and cabbage plants, they were gathered, placing each on top of the other, making a compact pile that was easily stored away. The next spring they were again used and again safely stored, save a few that came apart when wet in a shower of rain. A little earth placed on the windward side will keep them from being blown away. One quick at light work can easily make

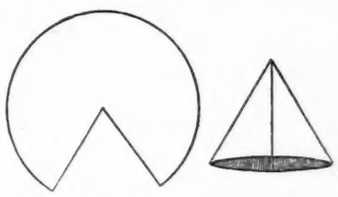


FIG. 1. FIG. 2.

PAPER PLANT PROTECTORS.

a hundred or more in an hour. Plants immediately covered with these cones, when transplanted, seldom fail to live. Being protected against hot sun and winds they are not checked or set back, but immediately commence to grow. For the home garden they may be put on and taken off as often as deemed necessary. Market gardeners can make the protectors of heavy building or sheathing paper that will last many years. A thousand can be put in place, or again gathered up in from thirty minutes to an hour. Fig. 2 shows the protector completed and ready for use.

THE FUTURE OF THE HORSE.

WEBB DONNELL.

When the agricultural world was invaded by labor-saving machinery, very much of which was operated by the labor of horses or cattle, the cry arose that men were to be crowded out of employment. The same cry was raised in a multitude of manufacturing industries whose operatives declaimed against each new appearance of machinery perfected in the line of economy of human labor. But results have proved the groundlessness of such fears. The introduction of improved machinery simply enlarged production, enabling it to keep pace with a rapidly increasing demand, while men's labors were found to be as much in demand as before, but under somewhat different conditions. In like manner, when a few years ago the possibilities of electricity began to become apparent, and the equipment of horse-car lines with this new motive power was seen to be a coming event, the cry was raised that the breeding of horses was to receive a serious check. Later came the safety bicycle, and thousands, who before depended upon horses for locomotion, sold their teams and took to the less expensive silent steed. Here, then, was another evidence of the passing of the horse. Just how far these fears are likely to be realized cannot yet be fully known, for the application of electricity as a motive power has not yet become at all universal, nor has the bicycle attained the full measure of its popularity, distinctly and widely popular as it has already become; but this much is certain, the time is not far distant when tens of thousands of horses that now draw tram and street cars will be replaced by the trolley or storage battery system.

NANCY LEE.

In the continuous discovery of electrical possibilities it is impossible now to say whether electricity may not replace horses in other lines of work, such as teaming between points joined by electric railroads, on some of which even now freight, as well as passenger cars, are being run, the freight service being employed in the night when the track is clear. All these signs point to a gradual encroachment upon the work of light and heavy draft horses by the electric current, whose wonderful powers are being so rapidly demonstrated. One need not be an alarmist to foresee a lessened demand for work horses from that demand that would undeniably have existed had electricity not entered this field.

Draft horses will always be needed, but it is the part of wisdom to bear in mind a very possible curtailment of their usefulness, and, therefore, their value, in the future. The wise man lays his plans for possible contingencies. If he breeds horses of a particular grade, and thinks he sees a lessening demand for his product in the future, he will straightway get himself in readiness to meet changed conditions. Will he give up breeding horses? Not necessarily. He will simply find out what class of horses is likely to be in demand, electricity or no electricity, and will endeavor to meet the requirements of a changing market.

The person who looks carefully into the conditions that exist in society at the present time cannot fail to be impressed with the rapid accumulation of wealth on every hand, and the tendency to get as much comfort and pleasure out of it as possible. One marked result of this is an enormously increased demand for stylish and high-spirited driving horses, matched pairs and fast roadsters. The noted horse-breeding portions of the country are being constantly searched by the agents of wealthy men looking for horses that meet these conditions, and when they find what they want, the matter of price rarely stands in the way of a purchase. The State of Maine, for instance, is being constantly traversed by these men, and scores of horses are being as constantly shipped out of the State, leaving behind them large sums of money as their equivalent. It is the same in other regions where special attention has been given to the raising of fast and stylish roadsters. Nothing of an economic or industrial nature comes into this demand, and changing conditions of life are not at all likely to affect it.

There are many sections of our country excellently adapted to the raising of first-class horses, which have as yet, not been developed. A substantial beginning in this direction need not necessarily involve the investment of a large amount of capital. The main outlay would be for a pure-bred sire of a strain desired to perpetuate. From this starting point, the character of the stud should be constantly improved by the infusion of better blood. I have never been an advocate of an attempt on the part of the average farmer to raise fast horses, nor do I now advocate it; but I think the time has come to look the matter squarely in the face. If farmers are to continue to breed horses, it is the part of wisdom to let such breeding run in lines where there is the greatest demand and the most money. The secret, or, at least one of the secrets, of successful farming is to find out what the public wants and then to furnish the very best quality of the article desired. If the public wants a particular type of horse and is willing to pay liberally for good specimens of that type, and if farmers are to continue to breed horses, then it is certainly wise to supply the demand.

SHORT FURROWS.

MARION RAMBO.

Work is a delight only to him that loves it.

The "bone of contention" is often the jaw.

Be careful never to settle down near the suburbs of a mule.

Love that does not grow an ear of deeds, is a blasted stalk.

When the truth hurts, it is because it touches a diseased place.

There is much gold in the soil on your farm. Seek it with long plow points.

Be as careful of the seed you sow in your mental field, as of that you plant in any other.

Do not get so busy that you cannot stop now and then and see how happy you ought to be.

When the devil got into the hogs, they committed suicide. When he gets into some men, they pat him on the back.

As a rule, there is enough time wasted around the average country railway station to cultivate any 400 acre farm in the neighborhood.

STAMBOUL AND NANCY LEE.

L. F. CAGWIN.

The recent sale of trotting stock at the American Institute building in New York attracted widespread attention. It was especially interesting from the fact that among the sixty-eight sold, there were two animals of national reputation. The owner, Mr. W. S. Hobart, had collected, at great expense, a herd of mares of the choicest pedigree known. At the head of this chosen band he had placed the famous trotting stallion, Stamboul, then having a record of 2:14¾. This horse he purchased for $50,000. One of the brood mares attracted much notice and caused public interest to be directed toward her through the marvelous performances of her daughter, the little black mare, Nancy Lee, dam of Nancy Hanks, 2:04, queen of the trotting turf, by Dictator.

Representative horsemen from all parts of the country were present; breeders, owners, trainers, prospective buyers, and also people interested in fine horses. It was, in fact, a convention of horsemen. It would be strange if much good did not come of so important a gathering, in the interests of the trotting industry, almost as much, perhaps, as though more formal and expressly called for the purpose. Knots of people collected here and there in the vast building, discussing the one all-important theme, the light harness horse, in all its multitudinous bearings and relations. Stamboul, whose record of 2:07½ made at Stockton, Cal., on November 23, 1892, caused him to become the champion trotting stallion, was the first to be offered for sale. The auctioneer announced the sale opened, and, while explaining at some length the conditions under which the animals would be sold, the magnificent horse, Stamboul, was led into the ring. He is a bay, hind pasterns white, about 15¾ hands high. He has a beautiful moulded outline, to which an arched crest lends majesty. He began trotting at two years of age. He won a two-year old stake in 2:37½, 2:37¼. As a three-year old, he made a record of 2:26½. At four years old he took a record of 2:23. At five years of age Stamboul won the national stakes. In this race he lost the first heat to Woodnut in 2:17. He won the next three heats in 2:17, 2:17¼, 2:17. After this he beat Arab 2:15, and others. He gained in this race a record of 2:15. Subsequently he acquired a mark against time of 2:14¾. At seven years of age Stamboul lowered his record against time to 2:12¼. In the following year, on November 29, 1890, Stamboul made his record of 2:11 on a regulation track, and harnessed to the old-fashioned style of sulky.

During the past season, at Stockton, Cal., Stamboul has successively lowered his record a number of times. On September 22d he trotted a mile in 2:10¼. On September 27th he reduced this to 2:08½. On October 8th he further reduced his record to 2:08. Finally, on November 23d, he obtained his present mark of 2:07½; the fastest ever made by a stallion. The National Trotting Association will not accept Stamfloul's fast records, claiming that its rules were not followed. This leaves Kremlin, the trotting stallion, king, with a time record of 2:07¾. Lobasco, 2:10¾. is still the fastest race stallion on the Trotting Register. Stamboul's 2:07½ record is, indeed, only equaled or excelled by that of one other trotter, the 2:04, made by Nancy Hanks. Stamboul is a pure-gaited trotter. He wears no toe weights, and his entire set of shoes weighs but sixteen ounces. It is a great feature in a stallion to have such perfection of action, and is markedly so in a horse of Stamboul's prominence, and must have its weight in considering him as a stock horse.

The sire of Stamboul was Sultan 2:24, who was a very impressive sire. Stamboul's dam was Fleetwing, dam also of Ruby 2:19¾, and of Lady Mackay (dam of Lucy R., 2:18½), by Hambletonian; second dam by Geo. M. Patchen, 2:23½; third dam by Abdallah. The fastest of the get of Stamboul is Murtha, 2:18. He has ten others of his get in the 2:30 list. He ranks first-class for a sire of his age. Stamboul went to Mr. E. H. Harriman, of New York, for $41,000. Mr. Harriman has, no doubt, not ceased to congratulate himself on securing the mighty stallion at a figure generally estimated much under what it was expected he would be sold for. It is a matter of satisfaction to New York breeders, or Eastern breeding interests generally, that Stamboul will go to Mr. Harriman's farm in Orange county, New York.

Nancy Hanks is now so prominent that any news of her is of interest. What many never dreamed of as a possibility, a slight little brown mare by her inherent power and, perhaps, genius accomplished. Nancy Hanks had skill enough to trot a mile in 2:04. Therefore, when a little black mare was led into the ring, with a pasted label designating her to be No. 2, the dam of Nancy Hanks was therewith exposed for sale. Her name is Nancy Lee. She was foaled in 1878 and is by Dictator: dam Sophy by Edwin Forrest; second dam by Brown Pilot; third dam by Lance; fourth dam by Bertrand. She was bred by Hart Boswell, Lexington, Kentucky. She was broken at two years old, was good gaited and showed indications of speed, but was bred at four years old and has produced a foal each year, with one exception, since. Her third foal, born in 1886, was the brown filly by Happy Medium, which has become famous as Nancy Hanks, the trotting queen. Nancy Lee is now in foal to Stamboul.

STAMBOUL.

Nancy Lee went to Mr. A. H. Moore of Philadelphia for $7,100. She will be bred to Director. Mr. Moore also secured the next lot offered, a bay yearling, daughter of Nancy Lee and Stamboul at $2,800. The bay weanling daughter of Nancy Lee and Stamboul went to Mr. F. P. Clark, New Haven, Connecticut. Besides these lots offered at the Hobart sale, there were sold the following day in the Hart Boswell consignment several others of the progeny of Nancy Lee. One, Flywheel, a chestnut filly foaled 1889, by Onward, went to Mr. L. Kemple, Philadelphia, for $3,158; another, Lady Boone, brown mare, foaled 1885, by Hambletonian, Mambrino, to Mr. A. A. Bonner, New York, for $2,700; and another, Mother Carey, chestnut filly, foaled 1888, by Robert McGregor, to Mr. L. B. Harkness, New York, for $4,550. Besides these, Nancy Lee produced in 1884 Dictator Wilkes, a brown horse by Red Wilkes and in 1890, the chestnut colt Hart Boswell by Onward.

Stamboul is a sensible horse in the stable and is inclined to be of a gentle disposition; yet if tried too severely, evinces very decidedly that he has high mettled quality, a characteristic which seems to predominate in the advanced trotting blood horse. Nancy Lee is likewise quietly disposed in the stable, though, like Nancy Hanks, she shrinks from strangers. While in many characteristics, Nancy Lee may resemble her daughter, Nancy Hanks, yet

in outline it has been noticed that she bears a likeness to Jay Eye See, also by Dictator, whose 2:10 is still the fastest record made by a gelding. The American Star type of conformation is inherited by both animals in a remarkable degree.

MANUFACTURE OF FANCY CHEESES.

HENRY STEWART.

The fancy cheese manufacture is rapidly increasing in the United States, and promises to still more largely increase as the public taste becomes educated in this line. It may be said that this is wholly an acquired taste. This is true, but there are now many valuable articles of food or luxury that depend on the acquisition of a taste for them, and it may be said that more money is spent for articles that are wholly repugnant to the natural taste, than would supply any one of the most necessary articles of food. It may be only necessary to mention alcoholic spirits of the various kinds, and tobacco, to show to what an extent tastes may be acquired. And it is a fact proved by the enormous consumption of fancy cheeses, the taste for which must be acquired by gradual use before they become popular, that once acquired these tastes become permanent. There can be no question of the usefulness of this acquisition, for it is very certain that these varieties of cheese are essentially nutritious and exceedingly digestible, as well as conducive to the digestion of other food eaten at the same meal. And as an instance of the instinctive choice of foods, it may be noted that these cheeses especially cured or partly digested, as they are in fact, by the process of curing, are generally eaten with pastry which is commonly considered the most indigestible part of our food.

Nearly all the most desirable cheeses, such as the Brie, Neufchatel, Camembert, Limburger, Swiss (gruyere), Edam, and Gouda are now made in the United States, and American Roquefort and Parmesan are being tried. We are making the English dairy (the Gloucester, and the Wiltshire), and beginning to attempt that finest of all cheese made, the Stilton. No doubt we shall succeed in time, as we have done in every attempt in this and other industries. And as our scientific knowledge increases, and we find out precisely the various bacteria upon whose action the curing depends, and use their special cultures, as we now ripen cream for the churn, we shall doubtless improve upon the work of foreigners who have learned by many years of slowly gained experience just how the desired results are to be secured. We shall have cold and warm curing rooms, a properly regulated temperature, a skillfully bred bacillus to start the fermentation, and the other means to carry on the action and stop it just at the right moment, when entire exclusion of the air will preserve the cheese for any desired period, and thus prevent loss by premature decomposition.

One of the best of the imported cheese not yet attempted here, is the Gérardmer, or, as it has been corrupted by long use, the Géromé. This cheese is made in two kinds, the soft and the hard; the latter may be found in our markets and fancy stores, but the former, on account of its inability to withstand transportation, has never been imported, and consequently, as it has an enormous consumption in Europe and sells for a high price, it will doubtless find as many consumers here. It sells for twenty-five cents per pound in the European markets. This cheese is made in the mountains of the Vosges in Eastern France; a part of the territory which was taken with Alsace from the French by the Germans twenty years ago. This is a noted grass district, the pastures being watered by the mountain streams flowing down the valleys and laden with the spoils of the rich soil from the upper slopes. The cows are the best in Europe, giving rich milk, and being fed on clean pastures watered by the purest streams, and breathing the pure mountain air. The vessels used are of copper, and this, of course, adds to the purity of the milk, apt to be tainted by wooden pails and vats. As soon as the milk is drawn from the cow it is drained into the copper vessel through a fine linen cloth, but frequently a handful of the club moss common in the moist places, is used as the strainer. The milk is at once curdled.

The rennet for Géromé cheese is made by steeping in warm water, the calf's stomach, preferably in such a condition of maturity as to stick to the fingers in damp weather, showing that it is covered liberally with fungus growth, adding a little salt, less pepper, and a little saffron for coloring. Two tablespoonfuls of this liquid, after digesting four hours, is used for fifty quarts of milk. The milk is kept closely covered all the time, until half an hour after the rennet is added, when it is ready for the cutting of the curd, to separate the whey. The vat is again covered, and the curd left until the whey is completely separated. This is then dipped out from the curd, with care not to disturb the curd, or lose any cream. When the whey is separated as much as possible in this way, it is dipped out into a wooden mold, cylindrical in form, fifteen inches deep and seven in diameter. The mold is made in two parts one fitting into the other so that it may be removed as the curd settles down into the lower half. This has a bottom with many holes in it to permit the whey to drain away. In twelve hours the curd had shrunk into the lower half. The upper one is removed and a new mold put in its place, when the whole is reversed, and this is repeated daily, four changes being made each day until the whey has drained off the curd completely. The cheese is then formed; the temperature maintained during the process being 60° F. It is now salted. The cheeses are laid on a table sprinkled with fine salt in which they are rolled until the entire surface is covered. This is done every fourth day, or, in dry weather, each third day. They are turned once or twice a day and wiped with a clean cloth dipped in warm water. During this part of the curing, they sweat considerably from the fermentation, and when this is concluded they are removed to the dry room. One ounce of salt is used for each cheese. In this room the Géromé cheeses are covered with a cloth as a protection from the sun and the flies, and are fully exposed to the currents of air. The summer-made cheeses are dried in the open air in boxes having shelves for them to rest upon, the two long sides of the box being of cloth and the ends of wood, the upper side being sloping to shed rain. As soon as they are dry they are taken to the curing cellars where they are submitted to a current of air passing from north to south, and to a temperature that will effect the full curing in three or four months. If the temperature is too low the quality suffers, and much care is exercised by washing with warm water to avoid too great coolness. This moistening has also the effect of preventing too rapid drying and cracking of the crust. A little over three quarts of milk make a pound of green cheese.

A variety of the Géromé cheese is "anisé" as it is termed, that is, flavored by the anise plant, some of which is shred between the layers of curd as it is placed in the molds. This gives a greenish color to the cheese something like that of Roquefort cheese, and for which the Géromé cheese is often made a substitute. The most particular care is exercised all through the various processes, to prevent any moldy flavor being acquired by the cheese, and any incipient moldiness is at once checked by wiping the surface with a cloth moistened with warm water, and exposure to the dry air. The weight of the cheeses varies from five to twelve pounds, the smaller ones are cured in six or eight weeks, and are made for local consumption. The larger ones are sent to the cities for sale. The quantity made yearly is now about 1,000 tons. The shape of this cheese is a flat cylinder, seven inches in diameter and four inches thick. It is made during the whole year.

SHALLOW CULTIVATION FOR CORN.

A. G. CHASE, KANSAS.

In conversation with a neighboring farmer recently and one that "banks" from $2,000 to $3,000, annually, as the net proceeds of a 160 acre farm, he said, "Year by year I am still more convinced that shallow cultivation is the best for a corn crop, and, unless we have some way to firm the ground well, shallow breaking as well." I think this is true with some slight modifications. A heavy loam should be broken deeper than a sandy soil. Every other year or every third year the light soil, if corn follows corn, should be turned up to the depth of ten to twelve inches, but immediately after planting, the roller, or some weighted contrivance, that will pack the ground, should be used. A heavy loam that is tile drained will give better results, broken five to six inches, than it will at ten to twelve inches, and save the work of one to two horses, and I am satisfied this is true, too, for a wheat crop. But it must be borne in mind, that in all prairie countries the wind is almost an everyday occurrence during the spring and summer months, and if we have ten days without rain where the ground has not been well firmed or packed, it will take the moisture out of the soil to a depth of two inches. This point, too, has its bearing upon the after-cultivation of the crop. A judicious rotation, in which clover plays an important part, will clear the ground from weeds, and thus render the close plowing of the crop needless, and if "listing" is practiced save much labor.

Killing Orchard Grass.—Plowing the ground thoroughly will kill orchard grass as easily as it will timothy. Orchard grass is so hardy and conspicuous that every clump of it in a field will be seen.

THE QUINCE RUST.

DR. B. D. HALSTED, NEW JERSEY EXPERIMENT STATION.

Early last summer a quince grower called at my laboratory and made complaint that his orchard of a hundred or more quince trees was not doing well. A visit to the orchard a few days later assured me that one of the causes of the trouble was a genuine rust, the botanical name of which is *Rœstelia aurantiaca*, Pk. While the quince fruit is quite small the threads of the rust plant grow through it in all directions, and in one or more places the green color of the fruit is replaced by orange, the quince at the same time becoming distorted. Sometimes the whole fruit turns yellowish. Small pimples soon appear which, continuing to enlarge, finally develop into horns projecting some distance beyond the ruptured epidermis of the fruit. Within these tubes, or horns, the bright orange-colored spores are produced in great abundance and fall out upon the slightest touch. Fig. 1 is an engraving from a photograph of four young quince fruits which were badly infested and so distorted as to have lost nearly all the appearance of quince fruit. The horns, which bear the spores, may be seen as projections from the surface of the abnormal quinces. These fruits usually failing to grow, or enlarging but slowly, become hard by drying and either fall to the ground, or hang upon the trees as unsightly objects until the close of the season, possibly until the following spring. The quince leaves may be affected with the same rust and become blotched with orange, the affected spots finally producing the spore-bearing horns similar to these upon the diseased quince fruit. The quince rust fungus lives during a part of its development upon two kinds of juniper; namely, the red cedar and the low juniper and may be recognized upon the stems by the swollen nodules of reddish color it produces. Fig. 2 is an engraving from a lithograph by Dr. Farlow, that shows a branch of red cedar, A, badly infested with the galls of the fungus. This was known as a parasite of the cedar before the fact of its connection with the quince rust

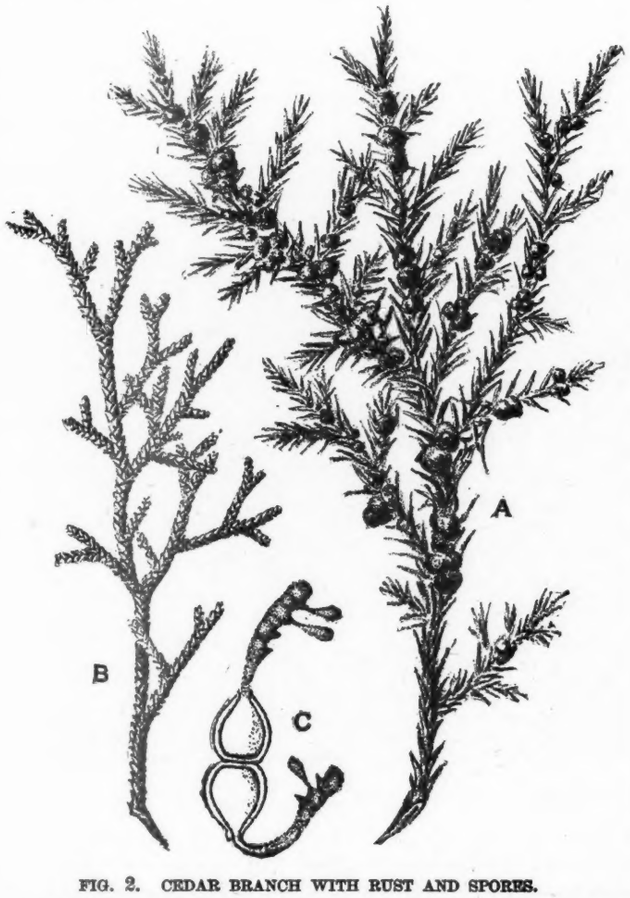


FIG. 2. CEDAR BRANCH WITH RUST AND SPORES.

was established, and had received the botanical name of *Gymnosporangium clavipes*, C. & P. A healthy branch is shown at B, and the differences between this and the diseased one are great, aside from the absence of the galls. The presence of the fungus within the tissue of the stem and leaves causes the foliage to assume a peculiar form, each leaf being large and sharp pointed. The spores are produced in the nodules and are pushed out during rains in spring time. A single spore is shown at C, which is undergoing

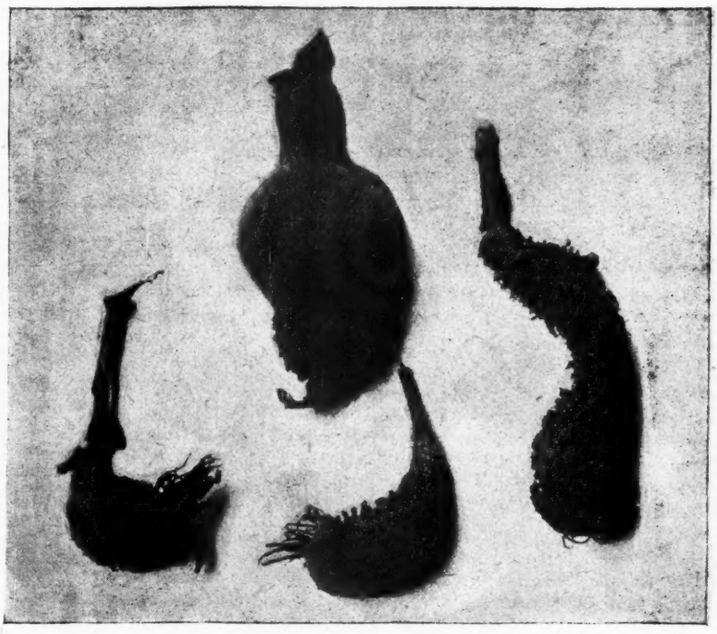


FIG. 1. YOUNG QUINCES AFFECTED WITH RUST.

germination, and a tube is represented as growing from each end, the small bodies thus formed separate and, finding their way, by the wind, to the quince tree, there grow and soon produce an orange-colored spot upon leaf or young fruit.

It is important to know that the quince rust grows in one form upon another plant, for it is possible to check its ravages by diminishing the chances of its being able to find a cedar upon which to live. So far as we know it seems likely that if the cedars were absent the rust of the quince would not be present. The quince stage of the rust is not confined to the quince but thrives upon the apple, hawthorn and shad-bush, in fact it was first found upon the latter plant. This fact complicates matters somewhat, for the shad-bush and the hawthorns serve as breeders of the troublesome parasite in the hedgerow and wood lot. The rust that is now under consideration is quite different from the many molds, mildews and blights that prey upon our crop plants, and may be held in check with fungicides. The rusts proper, of which there are many hundred kinds, are deeply-seated gross-feeding fungi, and usually have done a large portion of their mischief before observed. There is but little doubt, however, that spraying might be effective, if the time was known when to do it. This would mean the application of the fungicide to the quince trees at the time, or just before, the spores are mature upon the cedar nodules. A better way, however, seems to be found in the removal of cedars from the vicinity of quince trees. As another cedar gall fungus is associated with the rust of the apple, it is all the more important to separate the cedars from our orchard fruits, to prevent these diseases.

Growth of Young Animals.—There are some things that every farmer should keep constantly in mind, and one of these is that the most growth is made by a young animal, in proportion to the food consumed, and consequently in proportion to its cost. Then it follows that the most profit is made from young animals. This is most applicable to young pigs, which for the small quantity of food consumed will double their weight in a few days. It is a good plan to give a little sweet cow's milk in a shallow pan to sucking pigs, especially those that are born late in the season, not forgetting to feed the sow the best food. Buckwheat and oats ground together and given in a slop made by pouring boiling water on this meal, and leaving it to cool, will make a surprising growth in young pigs, and with a warm pen and soft bed the litter will thrive in the best manner. By cultivating this ability to grow rapidly, and rearing two litters in a year, a good brood sow may be made worth the interest of $500 every year. Such an animal deserves all the encouragement and kind treatment that may be given her.

THE CUBAN SUGAR INDUSTRY.

I. N. FORD.

There is a strong probability that the new sugar crop in Cuba will fall behind that of 1892. How great the reduction will be is largely a matter of conjecture, but by the concurrent testimony of all the planters with whom I have talked, it cannot be less than 75,000 tons and it may be as much as 150,000 tons. The main cause of this reduction is a shortage of cane. The weather during the early autumn was unfavorable; the rains during the season were unequally distributed; there was too much wet weather at one time and there was a serious drouth at another. I was with one of the most experienced planters in the interior of the island when his sugar-mill was started for the winter's grinding. His practiced eye at once detected an inferior quality of cane. "There will be less sugar made in Cuba this season," he remarked with an air of conviction. His judgment was based upon the condition of the fragments of bagasse which were travelling from the mill to the furnaces where they were burned as fuel. This planter had succeeded in making contracts early in the season for all the cane which he would require during the winter, in order to keep three sugar factories in full operation from the beginning of December to the end of April. His position was exceptional. Other large planters whom I met in Havana, Matanzas and in the interior of the island frankly admitted that cane was scarce and that they would not be able to obtain a full supply. Small planters, who had not sold their crop in advance, were quick to take advantage of the large manufacturers' requirements. They were asking higher prices for their cane and driving good bargains for it. The great manufacturers, if left dependent upon the cane on their own estates could keep their mills in operation only a few weeks. When their fires are lighted in December they are anxious to grind cane continuously until May. In order to do this they are compelled to purchase cane in enormous quantity from the small planters who have abandoned sugar-making. Cane was cheap last year because there was a large crop. This season, when there has been a great increase in the mechanical facilities for making sugar, the cane is less plentiful and dearer. The Cuban sugar crop for 1892 was officially reported early in December to be 965,519 tons, with 56,422 tons of molasses. When the returns are completed it will not be less than 1,000,000 tons of sugar. As the crop in 1890 was 645,894 tons, this marked an enormous increase in the production of sugar during two years. It is to be explained by a redistribution of labor and a material improvement of the mechanical plant. In olden times every planter could make sugar because the mills were driven by ox-teams, and the process of boiling, clarifying and crystalizing it was a simple one. Now every condition of the industry has been changed. Sugar-making has become one of the most complex and scientific of modern manufacturing industries. Great factories, lighted by electricity, are filled with ponderous and delicate machinery. As it is no longer profitable to make sugar on a small scale, the grinding and boiling are done at a few large factories, which are fully equipped with machinery and are manned by expert workmen. The small plantations have thus been converted into feeders for the large mills. The cane is raised under contract and delivered at the great factories when it is in the best condition for grinding. This distribution of labor has enabled the main body of planters to devote their energies exclusively to agriculture, and to increase the acreage of cane materially. It is practically the same system which has been employed in the beet industry in Germany, and in the United States, so far as it has been introduced, the central factory having to be supplied from a large number of beet farms or else the machinery cannot be kept in operation successfully.

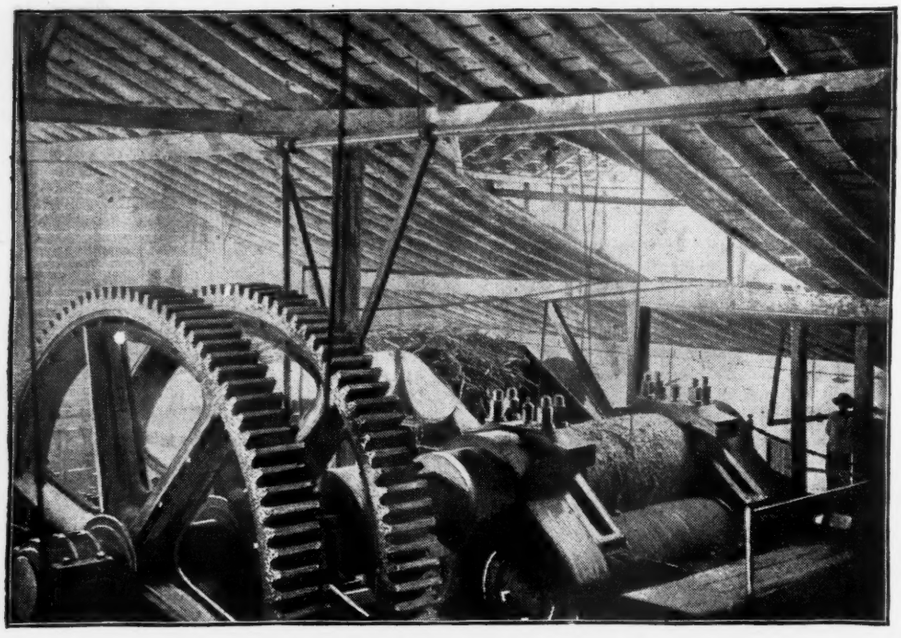


Fig. 1. CANE-CRUSHING MACHINERY, NUEVITAS, CUBA.

The improvement in the mechanical plant of the Cuban industry during recent years has been marvellous. One large factory which I have visited in the Matanzas district was purchased by the present owner ten years ago. There is only one grinding mill in it at present which was in use then. All the other machinery has been replaced by improved mechanism, and the production has been enormously increased. The same may be said of nearly all the large factories in the sugar districts of Matanzas, Cienfuegos, Car-

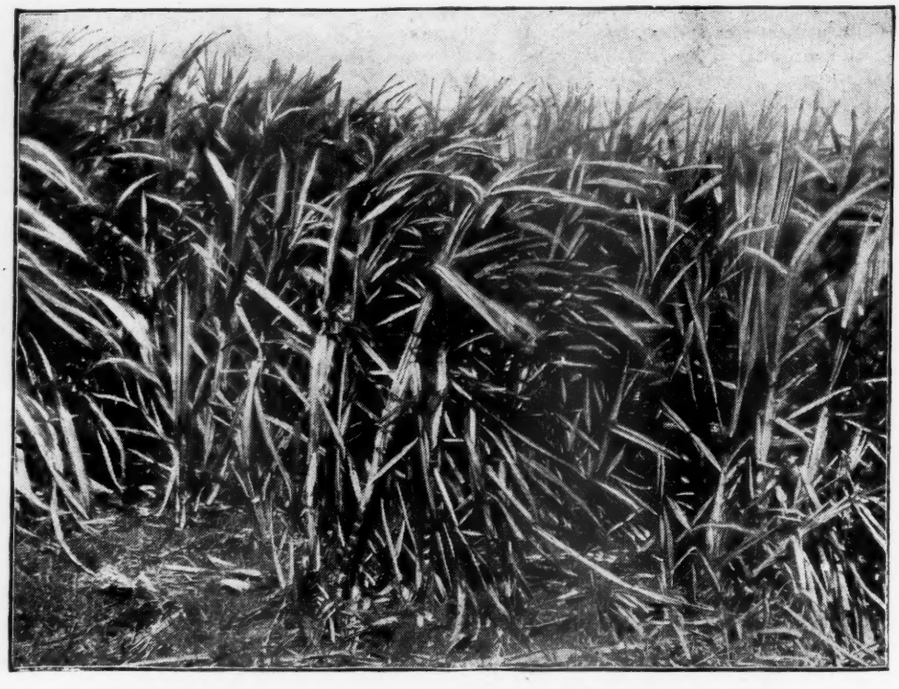


Fig. 2. SUGAR-CANE FIELD, ELIZALDA, CUBA.

denas, Sagua, Havana and Santiago. During the last two years improved machinery has been coming to the island by every American steamer, and sugar is now made here by the most scientific and economical methods. In fact it would be difficult to find in New England any branch of manufacture that is conducted with more skill or enterprise than sugar-making in Cuba.

The problem which the large manufacturers have been working out with satisfactory results is that of simultaneously increasing the product and diminishing the cost of sugar per pound. Improved machinery has been the common factor in the equation. A planter who could make 5,000 tons of sugar five years ago, now produces 10,000 tons without a proportionate increase of working expense. He has doubled his product by enlarging his plant and by improving the processes so as to get a larger percentage of the juice out of the cane, and more sugar and less molasses out of the juice. Twenty years ago cane was ground once between rollers. Now it is first torn by an enormous shredder and then ground twice by mills. The mechanism of the defecators, the triple process of boiling, the vacuum-pans and the centrifugals have been improved in the same way so as to prevent waste at every stage. At the same time labor has been dispensed with to a large degree. The machinery is, in the main, automatic in its action. Formerly engines were kept in motion by the burning of coal or wood in the furnaces, and a force of laborers was constantly employed in removing the refuse cane, or bagasse. Now this refuse is conducted automatically to the furnaces and burned under forced draft. Labor is saved at every stage of manufacture, even the bags being filled, stamped and weighed by machinery. A factory producing 10,000 tons of sugar in four or five months will not require a force of over sixty men and women. With the improved machinery the productive capacity of the unit of labor has been increased many times.

Hardly more than a decade ago the cost of making sugar was six cents a pound. Now it is not more than two cents; and the inventors are already reducing the decimals from the lower cost. Near Nuevitas some improved machinery has been designed by which the cane can be automatically dumped by car into the moving conductor. By this and other devices the labor of fifty workmen will be saved. In the same works there is mechanism for weighing cane and for measuring the juice. The manager, or the chemist, with these data before him, can estimate how much sugar he ought to have, or if he does not get it he can find out precisely where the leakage has occurred. One of the most experienced planters assured me confidently that he is enabled to make sugar for one and five-eighths cents a pound. That marks the perfection of the cane industry in Cuba. Improvement of plant is the order of the day in all the sugar districts of the island. One planter has set the example of building a fire-proof factory of iron at Elizalda, and it will probably be followed by the erection of a similar one in Nuevitas. There is no lack of enterprise on the part of the great sugar factors. If the government would give them a fair chance, and not load them down with taxation, they could increase the production of the island from 1,000,000 to 2,000,000 tons in the course of a few years, provided the acreage of cane were proportionately enlarged by the small planters. As it is, the existing plant is probably more than adequate for grinding and boiling the cane now under cultivation, and as many of the manufacturers are already predicting, "there will not be enough to round this season."

One of the questions which Cuban planters are discussing with interest is the probability of a rise in the price of sugar. Large as is the increase in production in Germany and the West Indies, it does not keep pace with the consumption of sugar in Great Britain and the United States. Experts are already assuming that nearly all the land available in Germany for beet culture has been utilized, and are predicting that, with the consumption increasing more rapidly than the production, the demand will speedily exceed the supply, and run up the price of raw sugar. These statements were made to me by one of the most practical sugar factors in the island. He seemed to regard it as a foregone conclusion that Germany would soon reach the limit of its productive capacity, and that the price of sugar would be largely dependent upon the development of the cane industry of the West Indies, and upon the general introduction of the sugar beet in the United States.

Two sugar factories, one near Matanzas, and the other in the Cienfuegos district, have been experimenting with the diffusion process, which is employed in the manufacture of beet sugar. While the percentage of sugar extracted from the cane is larger than by the grinding process, the expense of manufacture is much greater, owing to the necessity for burning coal in the furnaces. The results in these two factories have not justified the general introduction of the diffusion process. Moreover, the percentages have been raised by the improvement of milling machinery until there remains little advantage for the diffusion, or water-treatment

Fig. 3. CANE-SUGAR WORKS NEAR MATANZAS, CUBA.

method. The cane industry, as it is found in Cuba to-day, is in a highly-organized state of development. The most improved American machinery has been introduced, and the laboratory work in the best factories is scientific. The Cuban planters have not only organized a great industry, which is capable of holding its ground against Germany and the British West Indies, but they have recruited an orderly, well-disciplined working force with a genuine aptitude for sugar-making. [See engravings on preceding pages.]

DESIRABLE FLOWERING ANNUALS.

WILLIAM FALCONER.

The very best annuals are the very commonest. No really good annual, biennial, or perennial flowering plant of easy growth can become known to cultivation, and then pass into oblivion. Stocks, asters, sweet peas, mignonette, Drummond phlox, and others, are to-day what they have been for many years past, among the best garden annuals in cultivation. True, we are continually finding among our old favorites individuals that differ somewhat from the rest of their kind, and, by isolating and propagating them, we secure distinct forms, may be different in size, form, or color of blossom, compactness of habit, or other characteristic that, when established, are sent out as novelties. The kinds enumerated below are among the best common annuals that are easy to grow, showy in the garden and useful for cutting. The fact that I grow them all myself, and depend upon them largely for display and cut flowers, in summer, is the best recommendation I can give them.

SWEET ALYSSUM.—Sow a row of it early in spring, and another in June, and you will have it in bloom till hard frost comes.

CHINA ASTERS. — Rose-flowered, Victoria, Truffant's Pæonia flowered, and Jewel strains are capital. Sow early and again late in May for September blossoms.

CANDYTUFT.—White Rocket is fine, and is the variety mostly grown by florists.

COREOPSIS.—The annuals are called *Calliopsis*, and the perennials *Coreopsis* in catalogues, but all are true *Coreopsis*. *C. Drummondii* and *C. coronata* are both good. Make a second sowing late in May or early June.

BALSAMS.—Camellia flowered.

SINGLE DAHLIAS grow readily from seed, and bloom beautifully the first year.

DRUMMOND PHLOX.—Get seed of the grandiflora section.

ESCHSCHOLTZIA CALIFORNICA.—Mandarin and white-flowered are fine. Sow in an open, sunny spot.

GAILLARDIA PICTA and its variety *Lorenziana* are good annuals, but also get *G. grandiflora*, which, although a perennial, blooms the first year from seed, and is better for cut flowers than the others. Sow in an open, sunny spot.

GLOBE AMARANTHS bloom continuously from midsummer till frost. It is better to raise them in a window, or frame, and plant out in open ground.

MARIGOLDS. — Meteor and Prince of Orange. Pot marigolds for early summer, and from June sowings for fall flowers. Striped French marigolds for blooming from summer till frost. The dwarf marigolds are very free, and take up but little room.

MIGNONETTE.—The Machet is a very large-flowered, highly-fragrant variety, and it grows well out of doors. I know of nothing better.

NASTURTIUMS.—The dwarfs for beds or borders, the tall and *N. Lobbianum* varieties for fences, or trellises, and all for cut flowers.

PANSIES.—There is no use of sowing these till July. Trimardeau for size, and Bugnot and Odier for beauty, substance and spots. The majority of the multitude of named sorts found in catalogues are simply forms of these.

PETUNIAS.—Dwarf striped for compactness and beauty, and *Superbissima* for size. Only a small percentage of the doubles come double.

POPPIES.—Double-pæonia, flowered, which are the big, large-headed ones, *Umbrosum*, the brilliant crimson, and Shirley, the single or semi-doubles, of much smaller growth, are pretty, and they naturalize themselves after the first year, if they are allowed to ripen their seed.

SALVIA SPLENDENS, raised from seed, blooms beautifully the first year.

SCABIOS OR MOURNING BRIDE.—The dark purple variety is the favorite; the mixtures give several shades. The dwarf scabios are as floriferous as the tall ones, only the blooms are a little smaller.

STOCKS. — The large-flowered German ten-week stocks are excellent; so is the perpetual Princess Alice. Ten-week stocks, although fine in early summer, are not satisfactory in the fall.

SWEET PEAS are indispensable. Sow early, in deeply dug, well-manured land, and support the vines on pea brush, or wire netting. Black-purple, white, and invincible scarlet are good colors to have. Buy the seed by the ounce or pound.

VERBENAS.—The Mammoth strain, with a preponderance of scarlet color. Sow early. Plant thin.

ZINNIAS.—Procure the very best strain of double sorts your seedsman has for sale. The dwarf varieties need further selection. The carnation-striped has not been worked up enough yet. Coccinea is a fine zinnia. Some of the pompons have very double blossoms. Make a large sowing of zinnias late in May, to succeed early poppies, etc. They will bloom all through the fall.

STRAWBERRY CULTURE IN THE NORTHWEST.

C. L. HILL, MINNESOTA.

The best time to set out strawberry plants is in the spring, as early as the ground is in good condition to be worked. The sets should be runners of the previous season's growth. It is quite important, too, that they be taken from a new bed, planted the previous year, and which has not been allowed to bear fruit. Such plants are more vigorous than runners from an older bed.

Strawberries will grow on almost any kind of soil, as may be seen by noting the patches of wild plants found in all parts of our country. But to do their best, the soil must be rich in plant food that is easily available and near the surface. When practicable, some favorable hoed crop should occupy the ground the year preceding the planting, that extra attention may be given to keeping down the weeds; also to heavily manuring the soil in advance. As a rule, a northern slope is more satisfactory than a southern. The latter is likely to become seriously injured by the process of thawing and freezing, in winter or early spring. It is also likely to hasten the growth too early, and bring out the blossoms before danger of frost has passed.

The distance between the rows depends somewhat on the variety, also on the method of cultivation one intends to adopt, and the amount of hand work he is willing to do. Since I have plenty of land I never plant any kinds nearer than five feet, for I wish to do much of the work with horses. With this distance one can keep the different varieties separate, where the rows alternate with different kinds. A good way is to mark off the bed into squares, five by three feet, and set a plant at every intersection of the lines. Then the two-horse cultivator may be run both ways, until the runners have made a good start, after which the one-horse cultivator may continue to run one way, along the rows, all the season. Even at this distance I find some vigorous growing varieties that would cover the entire ground, if permitted to do so. I allow them three feet of width for the matted rows, and keep an open space of two feet between. This gives room for the cultivator the first season, and for well mulched paths, a great convenience to the pickers, the next season. Along the rows of weaker varieties a little extra hand work in setting out the runners and training them in the right direction, is of great help to them. It is very important that the weeds be kept down, and the ground be kept mellow, all through the first season. Weeds greatly retard the growth of these plants; and the runners cannot take root when the soil is covered with a hard crust. Besides, a good supply of moisture is needed, if a heavy growth is expected; and weeds, as well as crusted surface, rob them of this.

The heaviest yielders are sure to be found among the pistillate varieties. The Crescent takes the lead on my soil; but the Warfield may be quite as good. The greatest difficulty lies in finding a good pollenizer, and one that is a thrifty grower and good bearer of marketable berries. The Wilson is a safe old variety for one to try. Capt. Jack is good, if one can keep it free from rust, and Michel's Early and Beder Wood are promising kinds.

Where the rows are five feet apart, not less than one-third of them should be set with perfect flowering plants. I arrange the pistillate and staminate varieties in this order: P S P P S P P S P. By this arrangement the pistillates have two-thirds of the bed, and yet every row of them has a pollenizing row at its side. The two kinds chosen to go together should be such as blossom at about the same time, and the pollen bearer should be one that will continue to blossom fully as late as the other. The beds should not be uncovered too early. It is better to leave on the mulch for a while longer, and let the plants get a later start, than to hasten the blossoms at the risk of their being damaged by late frosts.

WARBLES OR WOLVES IN CATTLE.

DR. COOPER CURTICE.

The first grubs of *Hypoderma lineata*, the cattle gadfly, I have found this year under the hides of milch cattle, on January 13th. They are apparently about three weeks later at the latitude of New York than at that of Washington, D. C., where they appear

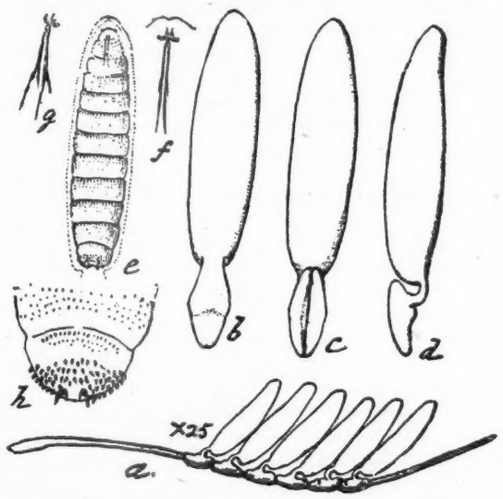


FIG. 1. EGGS AND EMBRYONIC STATE OF THE WARBLE FLY.

about Christmas time. I remember collecting them in Texas in September, but the larger proportion appear there in the winter also. The grubs collected on the day mentioned, in Westchester Co., N. Y., were in the first and second stages of their dermal existence. These parasites have now nearly finished a life of active wandering through the flesh of these cattle, their unwilling hosts, and, after passing through the third dermal stage, will squeeze their way out, leaving behind them a sore, which will take nearly a month to heal. After falling to the ground, these footless grubs can migrate but little, hitching along until they, perchance, drop into some crevice, or roll under some protecting tuft. At emerging, they may have been of a dark brown color, and soon after they become quite black. They soon become quiescent, and their outer skin, which was quite soft and elastic, becomes hard and firm, like a pear-shaped box, with a little lid on one side of the small end. With good luck in escaping being stepped upon, and the attack of mildew in damp weather, and with the average temperature of the season, the inhabitant of the box will, in about four weeks, take on its last form, and, splitting off the cap, emerge as a beautiful fly. Slightly reddish in color, a little larger than a house fly, these flies so much resemble, in flight and action, a honey bee, that they have been named ox-bee. Their color is given by little short, fuzzy hairs. The male has a short abdomen, while the last three or four joints of the female are so long that they curl forward under the abdomen, and suspiciously look as though a long, sharp sting lay therein, but the fly is actually without weapon of offense or defence. Even its mouth is so small that it cannot provide food for itself, but depends in its ephemeral life upon that which it robbed from the helpless cow, while a grub.

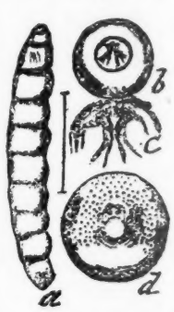


FIG. 2. THE SECOND STAGE OF LARVA.

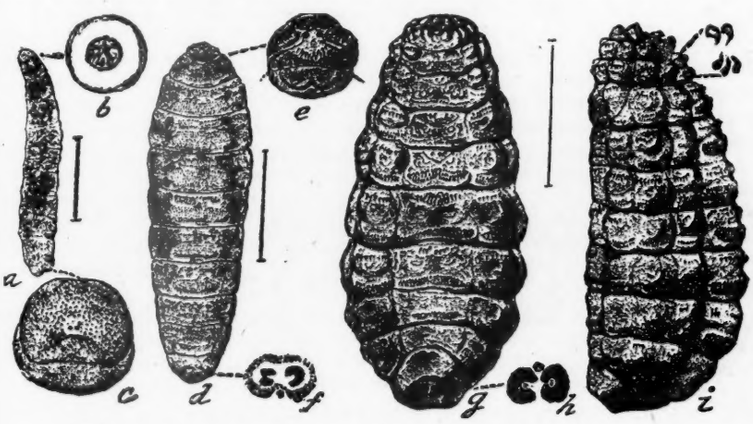


FIG. 3. GRUBS FROM OX-HIDES (*Natural Size, Showing the Straight Lines*).

After mating, the females may be found, according to Brauer, a noted entomologist, sitting, on warm days, upon the woodwork of stables, or humming around the haunts of cattle. Certain it is, as Dr. Handlirsch, a student of Brauer's, has demonstrated that the fly lays its eggs upon the hairs of cattle, preferably upon the back. An employe of the Entomological Division of the Department of Agriculture has also seen the flies depositing their eggs, and collected them, and Prof. Riley, chief of that division, has graphically described it in "Insect Life." Having deposited its eggs, the poor fly is of no further use to itself, or to its kind, and disappears from sight. Before 1891, our common ox-bot was claimed by all entomologists to be the common ox-bot of Europe, the larva of *Hypoderma bovis*, but in that year I succeeded in raising a pair of flies from the grubs, which put an end to the doubt. By my collections of many hundred grubs, all of the same kind, I had learned that there was in the North but one species. By comparing my flies with Brauer's descriptions, I soon determined them to be the *Hypoderma lineata*, the only species which had ever been positively determined in this country, and, as I learned from direct comparison, the only species among fourteen specimens in the National Museum at Washington. The egg, as we have seen, has been deposited on a hair. Now how does it get into the cow? At present we may judge by circumstantial evidence, and this alone. I prefer to think that nature has provided a method for the larva to make the cow surely lick it into herself instead of leaving the perpetuation of the individual and species to chance. The first evidence that the little grub did reach the mouth is to be found about seven or eight months later when the grubs, grown to a comparatively large size, are found in the œsophagus between the muscular and mucous coats. The grubs have been found in many places between the œsophagus (gullet) and skin so that this migration of the larva no longer rests in doubt. It apparently progresses tail end first, for this end is supplied with numerous sharp, cutting spines capable of boring, as the sequel shows, through the thick cowhide. After the grub has made a minute hole through the hide, a sac of the cow's tissue grows around it; it moults three times and then when fully mature squeezes out. In the cow the grub is nearly white, until toward the end, when it becomes brown. It lives upon the serum it excites in its wanderings when within the skin, but after it punctures it seems to live upon the pus secreted by its surrounding sac. The warble-form grubs, which appear in January, will have disappeared in April; in another month they will have metamorphosed into flies, which will quickly lay their eggs and disappear Their stay outside of the cow is therefore from a month to a month and a half. It is possible that the climate may delay the metamorphoses, but from all facts now at hand it seems that the fly belongs to the spring, and not the summer, as long supposed. It seems to me that many of the *Tabanidae*, the blood-sucking flies, have been mistaken for the ox bot-flies, and these usually come in the summer. The larvæ, therefore.

FIG. 4. MATURE FEMALE BOT-FLY OF CATTLE, ENLARGED.

FIG. 5. OVIPOSITOR.

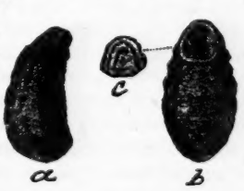


FIG. 6. PUPARIUM.

remain in the cattle perhaps ten or eleven months out of the twelve. I believe that our knowledge of the life history of this botfly will eventually assist us in ridding the herds of it. There are two weak points from which we can attack the animals. The most vulnerable one is when it is in the skin sac. It is quite easy to find these when present. One must search anywhere along the back and well down on to the sides, but mainly on the saddle. Here one may feel the small rounded elevation by lightly stroking the hair. On carefully parting the latter, one soon finds the little black spot which betokens the orifice of the sac. The grub can then either be pressed out by carefully raising the skin and pinching from behind

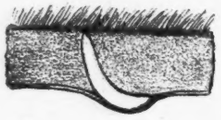


FIG. 7. FIRST DERMAL STAGE.

FIG. 8. SECOND DERMAL STAGE.

the grub, giving plenty of time for it to squeeze out, or one may prick the grub with a needle, thus allowing its contents to run out, and killing it, or one may prick it and fish it out with a hooked pin. Either process may be aided by lancing the hole and enlarging it. A farmer tells me he killed them by touching with kerosene. The latter cannot be guaranteed. If black or brown grubs are squeezed out they should be stepped upon and destroyed.

The other weak point is its egg stage. It is not likely that the fly can be prevented from depositing eggs somewhere on the cow. But may not those parts of the cattle that they can lick be smeared with something distasteful to the cow so that she will not lick during a month and a half after the disappearance of the grubs? For people who care to try it, the former plan is to be recommended. I predict that careful work the first year will so kill them off that there will not be any flies on the place to lay eggs, and it is doubtful if the flies on an adjacent farm will leave the cattle to hunt up others. Care in this direction should protect farms from the ox-grub.

[The accompanying engravings, after Dr. C. V. Riley, United States Entomologist, clearly illustrate the life history of the American botfly, In Fig. 1 are seen at *a* eggs attached to hair; *b*, *c*, *d*, dorsal, ventral, and lateral views of egg; *e*, embryonic or first larva, as seen in egg; *f*, *g*, mouth-parts of same enlarged; *h*, anal segments of same still more enlarged. Fig. 2 shows the second stage of larva from œsophagus; *a* larva; *b* enlargement of cephalic segments, end view; *c* mouth-parts; *d* enlarged end view of anal segment, showing spiracles and spines. Fig. 3 presents at *a* second

FIG. 9. THIRD DERMAL STAGE.

FIG. 10. CATTLE-BOT EMERGING.

stage of larva from bark; *b* and *c* enlargements of extremities; *d* ventral view of third stage, with details of extremities at *e* and *f*; *g* dorsal view of mature larva, with enlargement of anal spiracles at *h*; *i* lateral view. At Fig. 4 is seen the full-grown female insect, natural size indicated by straight line. Fig. 5 shows at *a* the ovipositor, much enlarged, and at *b* its terminal segment. Fig. 6 (after Clark) presents at *a* a view of the puparium (*H. bovis*) from the side; *b* same from above, showing exit hole of adult; *c* cap with splits off to allow the adult to issue, natural size. In Figs. 7, 8, 9, and 10, engraved after original drawings by Dr. Cooper Curtice, are shown the cutaneous stages of the American botfly, *Hypoderma lineata*.]

Wide Tire for Farm Wagons.—The common or narrow tire, now in use, is from one and three-fourths to two inches in width, while, if the width had been not less than three inches, the extra cost would not have been five dollars more per set of four wheels. Three-inch tires can be used upon land that is moist, while the same load, with a two-inch tire, would allow the wheels to have sunken more than a third deeper, have drawn correspondingly harder, cut up the land, and strained the wagon far more than with the wide tires. There is no question but that if manufacturers will put on the market a well-made farm wagon with three or four-inch tires, they will find a ready market, or if they will, at a reasonable price, furnish an extra set of wheels, the wheels being smaller in diameter, and with three and one-half inch tire, many farmers would purchase them.

GRAFTING GRAPE VINES.

GEORGE HUSMANN.

The principal advantages which are derived from grafting grape vines are: 1. The facility by which new and rare varieties may be increased by grafting them on old healthy vines. 2. The short time required to fruit and test new varieties, as the grafts, if the proper wood be chosen for cions, will bear a few bunches the first season, and a full crop the second. 3. The ease with which worthless or inferior vines can be changed into valuable bearing vines of superior fruit. 4. Varieties which do not grow readily from cuttings will generally graft easily, and can thus be propagated rapidly. 5. Increased fruitfulness. 6. Most important to California vineyardists, as it gives them the means of successfully combating the phylloxera. By it we can change a non-resistant vine into a resistant one, by grafting on a resistant vine at or near the surface, or by reversing the case, grafting a non-resistant with a resistant cion eight or ten inches below the surface. The cion will take root at the junction, thus transforming into a resistant vine in time, while the stock will furnish the sustenance temporarily, adding to its vigorous growth.

To perform the operation at the proper time is very important. In Northern California the month of April is the most favorable time, although I have had as good success in May, when the vines had already made a growth of six to ten inches. But it is very important to keep the cions in a dormant state, which can be done by burying them in the ground, in a shady place. At the time of grafting, the sap should be in rapid motion, as a junction will then be effected immediately. The cions should be cut early in the season, to prevent damage from frost, or other causes, and only the best wood of last season's growth should be taken. I prefer short-jointed, firm, well-ripened wood, of the size of a common lead pencil. The cuttings can then be tied in small bundles, and buried for future use. The tools needed for the operation, especially if the stocks are large, are: A sharp, thin-bladed knife, to cut the cions; a small saw, to cut the stock; a grafting chisel, with a blade three inches long, and a wedge on each end, and a wooden mallet for driving it. A small basket to carry the various tools will be found a convenience. If large vineyards are to be grafted, one man should take the earth away from the vines, and saw or cut them off; another cut the cions and insert them; and a third one fill up around the grafts. Of course, the grafter proper should be the most skillful man of the three. If resistant vines are to be grafted with non-resistants, the grafts should be inserted at or near the surface, to prevent them from rooting. If non-resistants are to be grafted with resistants, for the purpose of establishing the graft on its own roots, they should be grafted as far below the surface as possible. When both root and graft are resistant, or non-resistant, as the case may be, any smooth place will do, only it is much easier to graft at or near the surface of the soil.

FIG. 1. GRAFT. FIG. 2. GRAFTS INSERTED.

Having the ground cleared away, cut the stock off square, at a smooth place, between two nodes, and about one inch and a half above a node or joint. If the stock is a large one, split it with the chisel, then drive one of the wedges in to hold the cut open, and insert a cion on each side. The cions have to be cut to a long, sloping wedge, just below an eye, taking care to make the inner side of them somewhat thinner than the outer. Then push the cions down firmly, so that the stock fits closely, and be sure to have the cambium, or inner bark of stock, and cion join, for on this close union depends the success of the operation. Withdraw the wedge, and, if the stock closes firmly around the cion, no bandaging or waxing is necessary. In fact, I consider these even injurious, as the rapid flow of sap may choke and sour the cion. The third man now follows, presses some light earth on the cut, and fills up around the cion with well-pulverized earth, to prevent drying out. After forty years of practice, I have adopted the following plain

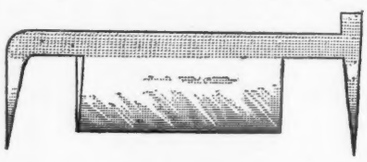


FIG. 3. GRAFTING CHISEL.

rules, and, by their observance, about ninety per cent. of all the grafts I inserted will grow, and produce thrifty, vigorous vines.

1. Cultivate your stocks carefully and thoroughly, so as to insure rapid growth, then wait until the stock is strong enough to hold the cion firmly when inserted, and insert two cions, at least fifteen inches long. They will be conductors of the sap, which flows naturally very heavy from a large stock, and establish the vine at once, at its proper height. Of course this rule may be modified in very cold locations, when it may be desirable to protect the vine in winter. If both cions grow, I cut the weaker at the junction, and have a perfect vine to bear a full crop the next year.

2. Use none but the best medium-sized wood for grafting, and keep the grafts dormant in a cool place until used.

3. Wait until the sap in the stock is in rapid motion before you graft.

4. Fill up around the junction with well pulverized soil, leaving only the upper two heads of the cion exposed.

5. Give the graft a support by tying it to a stake, as soon as the young growth starts; keep off all suckers from the stock, and

FIG. 1. PLANT OF LATHYRUS SYLVESTRIS.

do not disturb the cions in any way, so long as they are fresh and green. For small stocks, splice-grafting, performed as on small fruit trees, is better. A modification of cleft grafting, when the stock is not very large, is to make a transverse cut in the stock, from one side to the center, and then to insert wedge grafts. When these two methods are followed, tying with basswood bark, or some other suitable material, becomes necessary.

PLOWING WET SOIL.

In the spring some farmers are always in a great hurry to start the plow, because they are anxious to get through seeding. If the soil be wet and sticky, they are, in the end, the losers, for soil that is worked when wet, if of a heavy, clayey nature, will certainly dry out hard and compact. To make a hard ball of clay, one dampens it and presses it firmly together. Plowing clay soil when wet performs the same operation on a large scale. If such land be plowed very early, and is frozen two or more inches deep, the damage done is considerably modified, as the action of frost tears apart all the compact portions under its influence. Frequently, on gravelly soil, or that thoroughly underdrained, the plow may be properly started a week or ten days earlier than on clay land immediately adjoining. Portions of fields are often in proper condition for plowing when the remainder is thoroughly water-soaked. Advantage may be taken of this condition, and, if fields are low, the lands may be marked out by plowing one round; the water draining into the furrows will allow one to plow the rest a week sooner than if not so manipulated.

A NEW FODDER PLANT.

In the woods of Northern Europe, a slender pea-like plant flourishes, which is commonly called the Wood Vetch or Narrow-leaved Everlasting Pea. Through the late summer and early fall it is covered with beautiful purple blossoms. This vine, botanically known as *Lathyrus sylvestris*, has been introduced to our American farmers as a fodder plant. It belongs to the leguminous family, and, like clover, beans, and peas, has the property of fixing the free nitrogen of the air in tubercles upon its roots. For this reason it will thrive upon very poor soil. The advantages claimed for its growth in the Southern States are its large yield, cheapness of

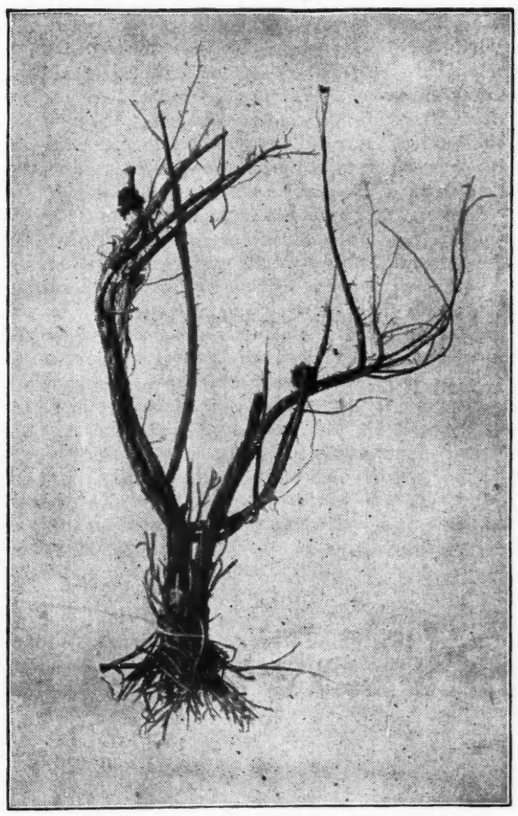


FIG. 2. ROOTS OF LATHYRUS SYLVESTRIS.

production, its growth in early spring, and its long life. The first year, no crop is produced, but thereafter it is said to yield large crops of fodder for many years. It is best to cut the fodder before the flowers ripen, as thereafter the vines become very coarse and fibrous. It is claimed that it is one-third more nutritious than clover hay, and contains three times as much food as timothy. In 1891, the United States Department of Agriculture distributed the seed of this plant to eighteen Experiment Stations for trial, but none of them have given a favorable report. It has been found difficult to get a good stand, as many of the seeds fail to germinate. As this plant has not yet been sufficiently tested in this country, it would be well for those who wish to try it, to do so on a small scale. The accompanying illustrations, engraved from photographs, sent us by the Massachusetts Experiment Station, show the plant of *Lathyrus sylvestris* in Fig. 1, and the roots in Fig. 2.

PLANTING CORN EARLY.

Farmers often get impatient when the season of corn planting is two or three weeks away, and if there has been a favorable spring and the weather has been warm and pleasant for a week or more, leaving the ground in good condition, their impatience overcomes

their better judgment. The corn is planted with the usual result of rotting in the cold, wet weather, and the chances are that much of it must be replanted. Corn, planted two or three weeks later, will produce the better crop. This planting and sowing out of season applies equally well to many other crops. Remember, that, on an average, seasons vary but little from the set period of proper warmth and cold. Hence, do not let a week of unseasonably fine weather lead you to perform some rash farm operation, but be content to wait. There is plenty of other work that should claim your attention during this anxious period. Any seed grain is better off in the granary than it is sown unseasonably.

GREEN PEAS FOR THE GARDEN.

A. CHARLES, NEW YORK.

To be grown to perfection, green peas require a lively loam, rich enough only to produce good strong vines; too rich a soil makes too much vine, with a tendency to mildew. This sowing of peas should be the first day's work in the garden, and only sufficient for a few meals at one time should be sown, as the crop is a short one. Generally, two pickings is all the market gardener expects to harvest, but in the family garden they can be picked for several days from most of the popular sorts. Therefore, for a succession, sowings at an interval of a week are necessary.

The earliest peas are the small, hard sorts, known as First and Best, or Best of All. Many changes are being rung on the name of this pea, that had its parent in the Improved Daniel O'Rourke. There is but little difference in these, either is early and productive. The Alaska, I think, is an improvement in quality, and is very early. For a second early, or for a general crop, McLean's Little Gem has much to commend it; it is a good cropper, of dwarf habit, requiring no brush, and in quality it is delicious. For a late pea the Champion of England, is still the champion. It requires brush, but it pays to use it, both for ease in picking the crop, and for the great increase in productiveness. Pea vines, properly trained up, produce a much heavier crop than if they are allowed to trail upon the ground. A certain variety will not give the same results in different localities. With me, the American Wonder is a very good pea, in some seasons perfectly satisfactory, while in others it will not return the seed sown. The same is true with other varieties, as with all other vegetable forms. I should urge most earnestly the trial of the new sorts put out by responsible seedsmen, as the best is none too good, and when a sort is found of superior merit, and adapted to individual wants, it should be retained.

In our climate a good crop of peas in mid-summer is difficult to obtain, as the plants will not adapt themselves to our excessively hot weather. But a good crop can frequently be obtained in autumn, by sowing in August, and if a vacant piece of ground is at hand it is well worth while to make a trial.

In the average garden about ten times too much seed is used, which is, in a great measure, the cause of failure to secure a good yield. The vines should be at least two inches apart, three would be better, they would then grow strong and branching, bearing fully developed pods at every joint. Planted in this way the yield will be double of that where the plants are too crowded, and the pods will be much longer and better filled. For the private garden, peas should be planted in single rows, so that they can be worked, and the crop picked from both sides.

THE APIARY IN APRIL.

A. H. DUFF, OHIO.

To secure the best results in honey crops, careful management is required during this month. All weak colonies should be united with others. It will not pay to start with mere handfuls of bees, as the most valuable part of the season will be consumed in building up such into fair colonies. After uniting until all are fair colonies, they should be stimulated by feeding. By this means, only, can we get the best results. The crop of honey depends upon the force of bees on hand when the season opens. This kind of feeding is merely giving each colony, daily, a small quantity of syrup of honey. Queens that are not defective, when fed thus, will produce brood to the utmost capacity.

If colonies are nearly or quite destitute of honey this stimulative feeding should not be depended upon for their entire maintenance. They should have besides ten or twelve pounds of sealed honey. Feeding should be continued regularly except during the intervals when bees are gathering honey from the fields. Until the main honey flow sets in, great care should be exercised not to feed so heavily as to have any of our prepared feed enter the surplus honey receptacles that it may be placed upon the market for consumption. Many inexperienced persons seem to think that this feeding of bees is for the purpose of having them store up immense quantities of sugar syrup, which is to be put upon the market as honey. This is not the fact by any means. Every apiarist well knows that this would be a great injury to his trade. Hence the all important line to be drawn between feeding for the production of life and brood-rearing, and feeding for the adulteration of honey. Contracting the brood chamber will be much help in building up colonies during April. Division boards may be used to adjust the hive to accommodate the amount of bees therein. This economises heat, and more space will be occupied by brood in managing thus.

RAISING EGG PLANTS.

E. S. MILLER.

In the latitude of New York the seed of the egg plant should be sown about the first of April, in good soil, in a warm temperature, either in the greenhouse, hotbed, or kitchen window. As soon as the seed leaves are fully grown, and before the true leaves appear, they should be pricked out in good, rich soil in shallow boxes, and kept warm to push the young plants rapidly. When the first leaves are the size of a quarter of a dollar, pot them in thumb pots. They may be planted in the open ground from these pots, if the weather is warm enough to trust them outside. If not, they should be again shifted into three-inch pots, for in no case should they be checked in their growth. They may be grown in the flats until planted out, but they must be pricked out farther apart than when they are to be potted off from the flats. It pays to pot them, as potted plants stand transplanting to the open ground better.

Like other plants, they are subject to the attacks of insects and damping-off fungus. The latter, which is very destructive, is induced by a damp, close atmosphere. Give plenty of air, and never allow the plants to flag for want of moisture, nor keep the soil water-soaked. Insects must be fought with other weapons. Green fly can be kept in check by the use of good tobacco stems. If in the greenhouse, keep fresh stems on the heating pipes, wetting them twice a week, until their strength is gone, when they should be replaced by a fresh lot. If in the hotbed, or house, chop up some stems, wet them, and scatter over the surface of the soil as near the plants as possible. A few stems moistened may be scattered over the plants, and removed in a couple of days. Red spider is a troublesome insect in the greenhouse, but may be kept down by syringing the plants every day they need watering. Egg plants, as well as all seedlings, should be grown near the glass, to prevent their becoming drawn up, spindling and weak.

CHERRIES IN CALIFORNIA.

NINETTA EAMES.

The phenomenal size of Pacific coast cherries has always been a marvel to Eastern pomologists who often fail to recognize a familiar variety in the overgrown specimens found in many California orchards. The middle counties of the State are the best adapted to cherry culture, Santa Clara and Alameda standing at the head of the list. Though the cultivation of the cherry has heretofore been confined to a comparatively limited area, the late development of an Eastern market has caused an increase in the acreage of these trees. With the improved methods of packing and transportation, growers are enabled to profitably ship their surplus of cherries to Chicago and New York in quite as good condition as when picked in the orchards. The early ripening of this fruit in the mild climate of the Pacific coast, brings the cherry upon the market at a season when there is little, or no, competition with other varieties of fruit, and, as a consequence, it finds ready sale at remunerative prices.

While, as yet, there are few cherries grown south of the central section of California, recent experiments prove that first-class cherries can be raised in the vicinity of Los Angeles, Ventura, and San Diego. The greatest difficulty encountered is the uneven ripening. Notwithstanding this drawback, however, cherry trees which have come into bearing in these Southern counties, have been a good investment to the orchardist. There is no trouble in disposing of the crop at twenty cents a pound, the local market being large, and the adjacent territories of Arizona and New Mexico always willing to pay exorbitant prices for California fresh fruits. The varieties of cherries that do best in Southern California

are the Black Heart, Black Tartarian, and Cleveland Bigarreau. There are cherry trees in favored sections of California, whose age, enormous size, and astonishing productiveness, cause them to be pointed out to strangers as natural curiosities of the country. Of these, the venerable Napoleon Bigarreau, on the famous Rancho Chico, is probably the most widely known to horticulturists. This cherry tree has attained the astonishing girth of eight feet, and a height of sixty feet. It will produce yearly nearly a ton of handsomely matured fruit which sells to the nearest cannery for five cents a pound. Though upwards of forty years old, this patriarchal cherry tree shows no diminution in vigor or bearing quality. Another wonderful cherry tree of the same variety is found on the Sycamore Ranch a few miles from the "Garden City" of San José. This tree was planted thirty years ago, and has been used extensively for cions for neighboring orchards. It has a circumference

THE CHERRY HARVEST IN SANTA CLARA COUNTY, CALIFORNIA.

of six and a half feet with a spread of branches measuring sixty feet. In 1881, it bore its first heavy crop, since when it has never failed to annually net its owner from six hundred to a thousand pounds of the finest cherries, which bring seven cents per pound for canning purposes. [The accompanying illustration shows a laden branch and boxes of cherries picked from this magnificent tree, and the gatherers at work.]

Where the growth of wood is vigorous, as in orchards occupying the deep, well-drained deposits of old river courses, the trees are planted thirty to forty feet apart; whereas, in other instances, twenty feet is considered ample space. In Santa Clara, where close pruning is mostly observed, the young trees are planted nearer together. A rich, sandy, valley loam is always preferable, though the thinner soil of foothills produces an excellent quality of this fruit. California cherry trees are not only remarkably productive, but they are rapid growers as well, a bud from a yearling stock sometimes attaining a height of fourteen feet within twelve months. It is not uncommon for a Vacaville specimen cherry tree two years old, from a graft, to show a circumference of eight inches near the ground. Cherries command a higher price than peaches in the San Francisco market, owing to the greater labor necessitated in handling the crop. It takes nimble fingers to make a good picker and packer of cherries—for which reason women are generally preferred to men. The stem is left uppermost in making the neat layers in the boxes, which are afterwards opened from the bottom so as to better expose the perfect arrangement of fleckless fruit. The light colored cherries, particularly the Napoleon Bigarreau and Rockport Bigarreau, are in ever increasing demand at the canneries, and orchards designed for strictly commercial purposes are oftenest set to these varieties. Both are extra large cherries, sweet and juicy in pulp, the polished amber skin freckled with red, and each with its one crimson cheek turned out to the sun. Never is the multiplicity of birds so evident as in cherry season, and the ingenuity of the orchardist is strained to the utmost to protect his pretty crop from the greedy horde! The gopher, too, is a yet more formidable foe, his taste for cherry wood being educated to a nicety. A young tree gives him a gustatory delight hardly exceeded by the determined appetite with which he attacks a veteran cherry. Various remedies are employed to rid the orchard of this plague, poisoning, smoking and the gopher trap being the most efficacious. The "gum" disease is the most commonly known to California cherry orchards, and is rigorously treated by paring away the bark and painting the wound with a mixture of shellac and alcohol.

Importance of Attention to Details.—Too little attention is paid by many poultry raisers to apparently small matters, but the successful man is the one who secures every possible advantage. No detail escapes him. His chickens are hatched at the most favorable time, reared in the most approved manner and marketed when they will bring the most money. And not only that, but he selects the breeds which, all things considered, will give him the best returns.

The Mother's Account of Stock.

ALICE CHITTENDEN.

Twice a year the mother, if she be provident and far-seeing, has a "round-up" and takes account of stock. Before making new purchases it is always well to see what use may be made of the old garments. Get out the old summer underwear and sort it, laying aside all that is beyond repair for mending others. Then replace the worn neck binding with new tape; put on new facings, sew on buttons and, under weak spots, baste good-sized patches, cut from the garments past mending. These patches should be cat-stitched down on the wrong side and the thin places "run" down with No. 2 working cotton. It is a saving of time to cut the pieces for each garment, pin them on and pile a basket full of these ready to take up at odd moments. They are not so nice done on the machine, but where time is an object they may be stitched with a loose tension. The wrists of the long-sleeved gauze and other thin shirts are generally ripped and ragged after a single season. Cut them off for a few inches and cat-stitch a hem, which will just about make them the right length for a smaller child. The gauze and silk underwear of the adults of the family can be cut down for the younger children or the baby. It is often the case that a good, all-wool garment, that by long wear has grown too thin for its owner, can be fashioned into a smaller article, using only the thicker portions, that will give it a fresh lease of life and usefulness.

Next in turn come the stockings. Begin with those of the largest size and, if these have been neatly mended from week to week, nothing will be required but to sort out such as are intended to be cut down for the smaller children. The long hose of a tall boy in knee pants, which must necessarily be of good quality, will, from the worn place below the knees cut excellent hose for the toddler in dresses or one with shorter limbs. I always set a patch cut from the best part of a worn-out stocking under the knees of new stockings for the boys in knee breeches, and by this means postpone indefinitely the evil day of darning. Bits of thinner hosiery can be smoothly sewed to the wrong side of heels.

Petticoats that the wearer has outgrown can have false hems or ruffles of embroidery put on to lengthen them, and this artifice can be neatly concealed under the feather-stitched binding that comes at fourteen cents for a piece of ten yards. Flounces of plain cambric with half-inch hems can be used and have the seam, that joins them to the skirt, concealed under a row of this braid. Sort out all the faded ginghams and calicoes that are not worth repairing, because not nice enough to wear to school, and hang them aside until vacation, when they will do for berrying, nutting and romping over the farm.

If the dresses are in good condition, you may wish to freshen them prettily. If it is a plain waist put wide ruffles of the material over the shoulders running in a V-shaped point to the waist, back and front. If the waist is a full one the little jacket fronts can be added, felling them on neatly at the shoulders and under the waist without ripping the dress. Sleeves which are generally the first to show wear can have the uppers made into new unders, or long cuffs, and a new full upper, falling in a ruffle at the elbow, can be added. Indeed, you may add new sleeves of an altogether different pattern or color; pink chambray may be used with pale blue gingham, plaid or plain and vice-versa. Browns can be brightened with trimmings of turkey red; terra cotta plaids can be combined with pale green. Skirts can be lengthened by ruffles or bias folds of new harmonizing material, or a bias fold can be let in above the hem. Colored embroideries which come in flouncings of all widths can be added by way of lengthening a skirt.

Often the little Mother Hubbard spring cloaks can be made into the nicest sort of dresses for the very little ones, who have outgrown them as cloaks, by adding a lace bertha, or a yoke, sleeves and wide ruffles over the shoulders of some other material. A piece bag is one of the mother's greatest helps to economy. In it should go not only the bundles of new goods left from garments, but the best breadths of worn skirts, and even the good parts of large sleeves, odds and ends of trimmings; in short everything that is too good for the rag bag. After such a taking account of stock you will be surprised how the necessary purchases will seem to have shrunk in number.

Fighting the Moths.

PRUDENCE RHODES.

Nowhere does the ounce of prevention theory come in play better than in this matter of moths. You do not want to wait until the heat of summer before you begin to take precautions against this small and insidious thief. You may fold your fur and cloth garments ever so carefully in sheets of tar paper, and pack them away in cedar and camphor trunks; you may place among the folds pounds of camphor or camphorated tar, or carboline, or any of the vile-smelling moth preventives, from which enterprising salesmen reap so rich a harvest, but if you have left within the folds the hundred or so of moth eggs which a few energetic and festive moths may have had time to lay there, and which are too small to be seen, these will hatch hundreds of grubs, which these odors will not kill. Even the parent moth, should she be boxed up with these drugs, would not thereby be turned from her original purpose of laying eggs, and the grubs themselves, being born to the aromatic atmosphere, work as cheerfully as if there were no balmier airs; as indeed for them, never having known anything better, there are not.

If you can be on hand during the moths' picnic season, which is April and May, and can air and beat your garments once a week, meantime hanging them in a closet in which an open saucer of turpentine is allowed to stand, you may be reasonably sure that you will escape their depredations. After the season for laying of eggs is over, put each article in a pasteboard box, and paste over the cover and cracks strips of brown paper. Do this thoroughly, and you are as safe as if you had used pounds of tarboline also. Large garments should be put in bags of unlaundered unbleached muslin. If you have a spacious closet let these bags be sufficiently large for each coat to hang on a coat hook, to keep the shoulders in shape. Sew this hook firmly to the bag at the proper height, then sew the bag shut, and hang it by loops of strong tape, one from each corner and one in the middle. If the bag were merely tied shut, a thoroughly business-like moth would find an entrance. If you can do this before the season when moths begin to lay their eggs, it is of course just as safe, but in this climate heavy garments are often wanted as late as May.

The closet in which the garments are to be hung deserves your first consideration. Thoroughly clean it. Moths love dust, dirt and darkness. Give them as little of either as possible. Walls, ceiling and floor are best painted, and the latter should be bare; then wash all with strong ammonia and water, and if you have any reason to suspect their presence, spray the cracks with naptha or gasoline. If there are any dirty spots in the garments to be hung away, clean them with soap and water and turpentine. With such simple precautions as these, you need not sigh for a cedar trunk or closet, for you are safer than if you had the trunk or closet and omitted the precautions.

Correcting Children Before Company.

NELLIE BURNS.

There are parents who will, unhesitatingly, correct their children for their misdemeanors in the presence of company. They argue that if a child wilfully misbehaves before strangers, it is but justice that he should be punished before them. I think this a very grave mistake. Children should, undoubtedly, receive correction for their bad behavior, but it should certainly be inflicted in private. Owing to a child's tender years and lack of sense, much charity should be allowed for his shortcomings, and too great severity should be avoided in his discipline. At all hazards, a pride of character should be stimulated and preserved in children. And the humiliation of having strangers witness their punishment is destructive to such pride. The school boy, after receiving his first whipping in school, never has the same pride as before. He assumes a reckless, I-don't-care air to hide his humiliation, but his pride receives a blow from which it never recovers. Again, all family friction and "scenes" should be sacredly guarded from the eye and tongue of outsiders. To preserve the family dignity and respect should be the aim of every member of the home. And then, too, no refined person wants to be made the spectator of other people's domestic squabbles.

In company with a friend I once called at the home of a lady acquaintance. In the home was a little girl of five years, to whom my companion presented a little gift. The child accepted it, forgetting to return thanks. The mother, in a quick tone, said, "Why, Carrie, have you forgotten your manners?" The timid child, not understanding her mother's reproof, became confused and made no reply. Again the mother expostulated, with more severity. The child was so embarrassed that she was unable to speak. "You naughty girl," said the mother sternly, "I shall punish you for such behavior." Taking the little one by the arm, she led her to a closet and shut her in it. How slight was that child's breach of etiquette, compared with the mother's impoliteness in having such a scene before visitors, not to speak of her most unwise mode of correction. The pleasure of our call was marred, and for the sake of the humiliated little child in the dark closet, we made a very short stay.

On another occasion while dining with a friend, her six-year-old boy acted very impolitely at the table. The mother quietly told him to behave, but taking advantage of the presence of company to "show off," he continued his pert actions. The mother excused herself from the table, and in a very quiet tone told the boy to follow her. They were absent from the room several minutes, but when that young man again took his seat at the table he was as orderly as a deacon, and there had not been so much as one unpleasant word from the mother. If you would preserve your child's pride of character and avoid an unsavory reputation for yourself, let your governing be done in strict privacy.

The Influence of a Pleasant Voice.

ELLA ROCKWOOD.

Perhaps our own voice is not always as pleasant as it ought to be, but we realize it the moment we hear one that is soft and low and evenly modulated, and instinctively we alter ours to correspond with it. Nothing so quickly checks rising anger, or quick retort, as a gentle voice. Well has the wise man said, "A soft answer turneth away wrath; but grievous words stir up anger."

Few of us can remember our mothers, now, perhaps, passed away, as having had other than pleasant voices. Harsh words were strangers to those lips. The children, when they had done wrong were corrected, but the voice that chided their misdoings was a gentle one. Let our children have like remembrances of us. Children are quick to imitate. If the mother or father speaks crossly, or, in a loud, commanding tone, the child soon learns to speak so also, and among his younger companions he will assume the same tone that he has heard from older lips.

Although a pleasant voice is not given to everybody, culture can accomplish wonders in this as in everything else. Let any one strive to acquire a pleasant voice, persevering time after time when in a moment of forgetfulness the old harsh notes escape the lips, and after a time the voice will become changed to one at least soft and well modulated, if not musical.

Keep the Wash Boiler Dry.

Some housekeepers manage to let the wash boiler rust out in a few years. This indicates gross carelessness on the part of the user. As soon as the washing is completed, or the boiler can be dispensed with, wash and rinse it thoroughly, wipe dry, place on a moderately warm stove for a moment, until all moisture is evaporated, particularly from the bottom, on the inside. Set away, bottom side up, until again needed. By following this plan, one can make a tin boiler, with a copper bottom, last as long as a careless housekeeper will a copper one, costing three times as much as the tin one. This artificial drying need not be followed during the hot days of summer, unless the dr" be

a cloudy or a stormy one. If wash tubs, when not in use, are placed in the cellar, but little or no trouble will be experienced by their leaking. Keeping the outside well painted prolongs their use many years. The same conditions should be observed with the washing machine and churn.

Easter Egg Doilies.

A set of egg doilies as an Easter gift would make glad the heart of any housekeeper. It should include a large one about ten or twelve inches square, to be laid in the dish and folded over the eggs, and six or more small ones for individuals holding the eggs which are too hot to be handled with comfort while being opened. Make them of fine white linen, hemstitched or fringed, with the

EASTER NAPKINS AND DOILIES.

designs shown in our illustration outlined upon them in white or yellow wash silk. The small ones are to be worked in the center while the large one carries the design on one corner. By a little searching through the files of the AMERICAN AGRICULTURIST or through the toy books of the children a different design may be found for each one of a dozen doilies.

A Pretty Veil Case.

In these days of many veils no more suitable Easter offering can be found for a young lady friend, than a pretty case for the fluttering, filmy things that are always getting rumpled and lost. Cut from pasteboard two large, egg-shaped pieces and cover these on both sides with creamy white linen with an interlining of scented wadding. Bind the edges with narrow ribbon, lavender, yellow, pink or blue to suit the furnishings of your friend's room, or, buttonhole them with rope silk. Work the upper piece with some floral design in

VEIL CASE.

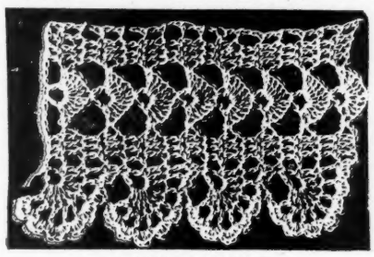
floss and outline on it the words: "A little lace for thy sweet face," in rustic, irregular letters. Cross the inside of both pieces with narrow ribbons, under which the folded veils are to be slipped and tie at either end with ribbons matching the embroidery.

Handsome Crocheted Edge.

F. H. PERRY.

Begin with a chain of 22 stitches, turn. First row.—One treble in fifth stitch, treble in sixth, treble in seventh, chain three, pass four, one treble two chain, one treble in next, chain three, pass four, one treble each in next three stitches, chain one, pass one, one treble in next, chain two, treble in same place as last treble, chain two, turn.

Second row.—Seven treble over two chain, treble in treble, *chain one, one treble each in next three treble, chain two, single crochet over three chain, five treble one chain, five treble in two chain, single crochet over three chain, chain two,



A PRETTY EDGE.

one treble each in next three treble, chain one, treble in second stitch of chain at top, chain four, turn.

Third row.—One treble each in next three trebles, chain three, one treble two chain one treble in one chain in middle of shell, chain three, one treble each in next three treble, *chain one, treble in treble, repeat from star seven times (here, after the first scallop, chain one, fasten to second small scallop in preceding scallop by a close single crochet, chain one), turn.

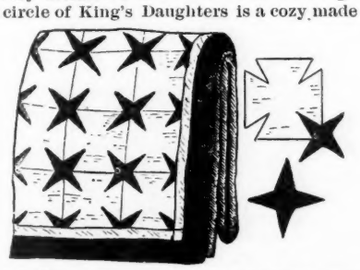
Fourth row.—Four double crochet over each one chain in scallop, and one single crochet in each treble except the last one at the beginning of heading—work a treble in that. The rest is worked like the second row beginning at the star.

Lace made by repeating the heading, so as to have two or three rows of shells with the three-treble stripe between them, is very pretty if one desires a wider pattern.

For a pretty narrow lace omit the shells and upper stripe in heading, leaving only the scallops and one stripe. Eight chain will be required for the beginning.

"King's Daughter" Cosy.

A very attractive little article for a fair given by a circle of King's Daughters is a cozy made of

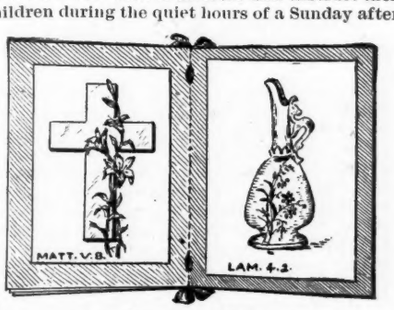


SILVER CROSS OR "KING'S DAUGHTER" COSY.

silver grey silk or cashmere. Cut the designs, as shown, out of stiff brown paper, cover with the goods and overhand together, using the grey for the cross and the purple for the star. It must have a lining of sateen quilted with several thicknesses of wadding. A simpler but very effective way of making one of these souvenirs is to take a piece of gray silk the size of your cosy, baste on it stars of purple velvet, and couch them on with silver tinsel, with which also mark the intersections shown in the illustration which will thus outline the cross. Sateen and velveteen would be less expensive materials.

Scriptural Scrap-Book.

Mothers who wish to interest and instruct their children during the quiet hours of a Sunday afternoon, will find a scrap-book, such as our engraving suggests, a very great help. The body of the book is to be made of colored paper or of brown manilla wrapping paper folded through the center like a sheet of note paper and stitched together firmly. A cover of stiff pasteboard will make it more durable. Let the Sunday afternoon work consist in filling it with suitable pictures from old Sunday school papers or magazines; where the picture suggests a text, print the book and verse under it and on some other Sunday the children will be interested in looking up these verses and committing them to memory. Certain pages might be lettered with the name of each child, and these pages dedicated to indexing the verses which each shall, from time to time, learn. If the cover be painted or etched with a suitable Easter decoration such a book would make a very delightful Easter offering to the mother of a family. The pages may be tied to the cover with bows of ribbon.



SCRIPTURAL SCRAP-BOOK.

A Ribbon Easel.

Take a piece of ribbon as wide and three times as long as your photograph. Fringe out the ends, and fasten on the picture just below the fringe. It is kept in position by a narrow ribbon, which is run through the holes in the corners and tied in bows at the upper left-hand and lower right-hand corners. The easel will stand up without any trouble. This is a pretty way of mounting hand-painted Easter cards, or a card and calendar can be substituted for the photograph. If the ribbon is a trifle wider than the picture or card to be mounted, the effect will be quite as good. Old ribbons, home-dyed, can be used with advantage, as little is seen but the fringe, and fresh narrow bits can be used for tying in the picture or card.

RIBBON PICTURE EASEL.

Watch Pocket.

When you give your small boy his first watch, make him a present, also, of a watch pocket, to insure its proper care at night. Our sketch shows a novel idea for this article. Cut an egg-shaped piece of wood from a cigar box, cover with a layer of perfumed wadding, and then with golden-brown velvet, which you must stretch neatly over the face, and hold in place by long stitches across the back; cover on both sides with the velvet, and overhand neatly in its place; finish the edges of the pocket and case with gold cord, caught on with blind stitches. Paint on the pocket a twig with a group of owls, or glue on several little Japanese owls on a bit of real twig, painting or embroidering above them the words, "We'll watch." Hang up by a brass ring, covered with crochet in gold silk.

WATCH CASE.

The Words of Thy Mouth.

ALINE ALDEN.

The principal of a public school with whom I was talking recently on the subject of the bad language which too many public school boys are in the habit of using, said "Only the boys themselves can put a stop to this pernicious and vulgar practice. Teachers and parents can forbid bad language in their presence, but in the streets and

on the playground we can neither know of it nor stop it. A single boy, however, with the courage of his convictions who is not afraid to let his schoolmates see that he will not use bad words himself and that he disapproves of the boy who does, will soon work a reform. We have repeatedly seen instances of this kind where the whole moral tone of a class has been raised by one boy."

Now, boys, this is encouragement for you. Just reflect, too, that the use of bad words is not a sign of manliness, as some of you may have thought, but of real weakness of character, of ignorance and of vulgarity. It is one of the habits that grow more repulsive with years. What is bad in a boy is worse in a man. Some years ago I was waiting in the anteroom of a great newspaper office, when from behind a screen I heard a volley of oaths that made me shudder. My horror and grief were intensified when I recognized the voice as belonging to one whom I had always esteemed a gentleman. A very safe rule to follow is never to use a word that you would be ashamed to have your mother hear, for you may rest assured that "whatsoever is more than these cometh of evil."

Sponge Bag.

It will be hard to find a more acceptable little gift for either a traveller or a stay at home than a sponge bag such as shown in our illustration.

SPONGE BAG, MADE OF OIL SILK AND SATEEN.

Make a bag of any preferred size; seven by twelve would not be too large for the bath-room, while four by seven would be as large as one would care to take on a journey. Silk, sateen or linen may be used; turn down two inches at the top for a ruffle and run in two rows of stitching for a shirr. Of whatever material the bag is made it must be lined with oil silk as far as the ruffle. The bag is intended to hold the washcloth and soap and an outer pocket of a doubled piece of oil silk, pinked about the edges, is sewn to the outside of the bag to hold the sponge. On the oil silk paint, with green oil paints, some bits of seaweed, a shell or two and this rhyme: "Use the sponge when you cannot take a plunge." The oil silk bag or pocket is to be left open on the sides which serves to air the sponge.

A Five O'clock Tea-Table.

Perhaps the simplest table for this purpose that I have ever seen was shown us by the wife of an army officer. It was made from four pieces of inch-square pine stuff, each thirty inches long, and two covers from cheese boxes. One of the covers was fastened to the four standards at the top, taking care to have them an equal distance apart and placing the rim of the cover upward. The second was fastened about twelve inches from the floor, and the whole was stained mahogany. Tea-tables look prettier low and we would suggest that any imitator of this idea should make hers not higher than 26 inches. It can be enamelled white and gold if preferred, but for this the wood should be sandpapered until perfectly smooth so that it will have a fine, and highly polished surface.

HOME-MADE TEA TABLE.

Serviceable Easter Gifts.

MAY SILVERS.

Should you send to the friend whom you wish to remember on Easter day, some more practical expression of your friendship than an Easter card or booklet, it will no doubt be even more appreciated than one of these pretty souvenirs, which however charming at the time, in a few years become mere cumberers of space. Let your gift be in some way commemorative of Easter, and, whether it be so utilitarian an article as a whisk-broom holder, or a dainty receptacle for letters or photographs, it will be quite proper and doubtless will be most welcome.

FIG. 1. EASTER LILY PEN WIPER.

For a penwiper draw upon white butcher's linen or gobelin cloth an Easter lily and couch all the edges with Japanese gold cord, after which work each petal with white filo floss in long and short stitch; work the stamens in outline stitch with a single French knot of yellow silk at the end of each. Cut out with a sharp pair of scissors and press carefully with a warm iron. Cut out several leaves from chamois skin of the same shape as the flower but just a trifle smaller; whip the edges with green silk, and stitch all together at the stem. Tie with a white satin ribbon at the stem end. (Fig. 1.) The same idea may be appropriated for a shaving case, using celluloid for the flower and a number of leaves of tissue paper for the inside backed by a lily cut from drawing paper. Tint the edges of the lily with liquid gilt, put in stamens tipped with gilt and tie with a pretty bright ribbon. A letter case for keeping unanswered letters is a very useful, and may be made a very pretty trifle. Linen in white, blue or ecru, or Gobelin cloth which is a new linen material very much used in fancy work of all kinds are the best for this purpose. Cut two pieces, one nine inches by seven, the other for the pocket, seven by five. On the upper half embroider a spray of apple blossoms and on the smaller piece with gold thread, work the word "Letters", scattering a few petals and blossoms here and there. Line with old rose silk if the outside is blue, or white with an interlining of linen canvas to give the necessary body. Put the two pieces together—as seen in Fig. 2—punch holes around three sides of the lower end and lace together with gold or blue silk cord. Hang up with ribbon an inch wide.

FIG. 2. EASTER GREETING.

High Tables in the Kitchen.

ELLA R. WOOD.

Much unnecessary strain of the muscles and consequent backache are caused by the use of low tables. An ordinary table or wash bench is too low for a tall woman to work over, without stooping. This is also the case with cook stoves and ranges. Oftentimes, if she would stop to think, she would "straighten up"; but from force of habit as soon as absorbed in her work again the old stoop of shoulders and bend of back is resumed. I know a woman who is five feet seven inches—not above the average height—who has her kitchen table made so that when at work at it no stoop of the shoulders is necessary. Her wash bench is made the same, as also her ironing table, which at first glance seems too high for convenient use but she does her work with far more ease and less of aching pains than she did before these tables were remodeled to their present height.

Women are often the cause of their own discomfort about their work by reason of not studying to do it in the easiest way. In the case of a stove, blocks can be placed underneath each leg, and if neatly made and painted are not unsightly at all. If one must use a low table, by all means have a high stool to sit on while working at it. This rests tired feet, and the habit of sitting down to do all possible work is one which housewives would do well to cultivate.

A Homemade Refrigerator.

HOLLISTER SAGE.

As farmers appreciate more and more the value of ice on the farm and desire to make it a kitchen economy as well, they learn the great value in both summer and winter, of a good ice box or refrigerator. Dealers do not hesitate to ask from 20 to 50 dollars for a size sufficient for a farmer's family, and of neat external appearance. But any farm hand of average skill with carpenter's tools can make one during a stormy day or two in winter. Many suppose it to be necessary to line the entire article of furniture with zinc, but this is an error. Only the tank for the ice need be of metal, and this must be watertight, with a tube at the bottom for draining off the water as the ice melts. It is the only expensive part of the refrigerator. Any tinner will make it for two to five dollars, according to size required.

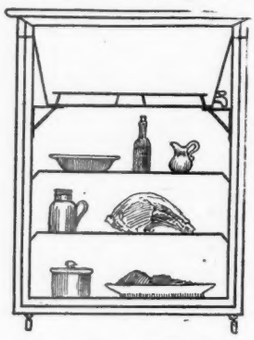


FIG. 1. CROSS-SECTION OF REFRIGERATOR.

The chief essential in a refrigerator is air spaces or non-conductive packing to prevent absorption of heat from the air of the room in which it stands. A tight box of the required dimensions is neatly lined with three-inch Georgia pine matched, a three-inch space being left between box and lining and filled with powdered charcoal. The lined box is then covered neatly with the same wood, or with ash or maple if one prefer. An air space of an inch or inch and a half should be left between the box and covering. Fig. 1 shows a cross-section of such a refrigerator, the space, the packing, and how the ice tank is held in place. Placed at the top, because this is the best position for the ice, inasmuch as cold air descends just as fast as heated air rises, the tank is held up by two brackets on each side of the interior of the refrigerator. The top of the tank is put between two boards of the lining before they are nailed and firmly fastened. A false bottom prevents the ice from injuring the zinc, and permits free drainage. Two or more shelves are put below the ice receptacle to hold whatever is to be kept cold.

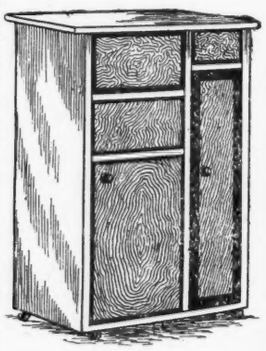


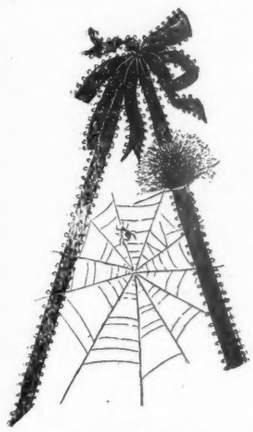
FIG. 2. HOMEMADE REFRIGERATOR CLOSED.

If an especially fancy cover be desired it can be made in panels as seen in Fig. 2, using walnut or some pretty wood in quarter-inch veneer, attaching it with small brads, and covering the countersunk heads with putty, colored to match. This wood can be bought already planed and polished at eight to fifteen cents per square foot. Such a piece of work if nailed, instead of being put together with screws, which are preferable, must be fastened in a thoroughly strong manner so it will not warp. If it should become musty, as unventilated refrigerators are likely to do in warm

weather, it should be fumigated. Nothing is more useful for this work than an ounce of sulphur and a live coal in an iron vessel closed within the lower compartment. The inside should be thoroughly washed with soap and hot water at least once a week. A galvanized iron pail or basin should be placed under the drainage tube which constantly carries away the water which would melt the ice rapidly if allowed to remain. Wrapping the ice with newspapers will prevent too rapid melting in very warm weather. This homemade refrigerator will soon save its cost in the food it preserves from decay, to say nothing of the deliciousness of iced foods and drink.

Bric-a-Brac Duster.

Every housekeeper knows the convenience of having a duster handy to fleck off the motes that settle so quickly on her parlor ornaments. Two yards of inch and a half picot ribbon, of such a color as will harmonize with your furnishings, will make a very ornamental affair. Make a bow and several short ends for the top, with two long hanging ends, one of which must be as much longer than the other as the handle of the duster. Turn up this end and overhand it for a pocket, in which to slip the prettly little feather duster. At any Japanese store you can buy a web like that shown in the illustration, which must be fastened to the long ends of the ribbon. Crochet a brass ring with floss, and fasten it to the back, to hang from the corner of a cabinet, or on a nail beside the mantel.



BRIC-A-BRAC DUSTER.

A Serviceable Chandelier Ornament.

HARRIETTE P. RICHARDSON.

A very pretty little ornament to hang from the chandelier, or between lace curtains at a window, is made by crocheting several small covers to fit tiny bottles. Crochet round and round like a miniature umbrella cover; after completing a dozen or more of these covers fit the little bottles into them. Suspend these by cords or ribbons of unequal length, fastening all the cords under a bow of ribbon. Suspended from the chandelier, they will be useful to drop burnt matches in, and between the lace curtains they may be used for artificial flowers. Pale green or dull yellow silk is very pretty for these covers.

Paper Carpets.

This has been called a paper age, and quite justly, perhaps, when even cart wheels are made from paper, but it was poverty, and not science, that led to the following invention: Carpets were needed, and there was no money for their purchase, so the pine floors had the cracks filled with putty, and every inequality leveled with the plane. Common, stout manilla paper that costs but a few cents a pound was pasted down smoothly; then a heavy, dark, inexpensive wall paper, conventional in design, was chosen, and firmly pasted to the brown paper. When this was dry it received a coat of sizing, and then one of floor varnish. Rugs were laid here and there, and although this was several years ago, the paper carpet, which receives a yearly coat of varnish, is still in good order.

Variety in Table Beverages.

In most homes, tea and coffee are the beverages used at meal time, but there is no question that a properly made cup of cocoa or chocolate would be relished at meals two or three times each week. As to the expense, they will not vary much from the best tea and coffee. Full directions accompany each package, and those who use them find them beneficial, even when used in large quantities. Many persons who are very fond of tea and coffee, injure their health by a too free use of these stimulants. In such cases, a change to cocoa is productive of good, especially in nervous affections. For children, a beverage of milk, cocoa or chocolate is preferable to tea or coffee.

A Needlebook and Emery Bag.

To make the needlebook, illustrated in Fig. 1 procure a piece of soft chamois skin five inches

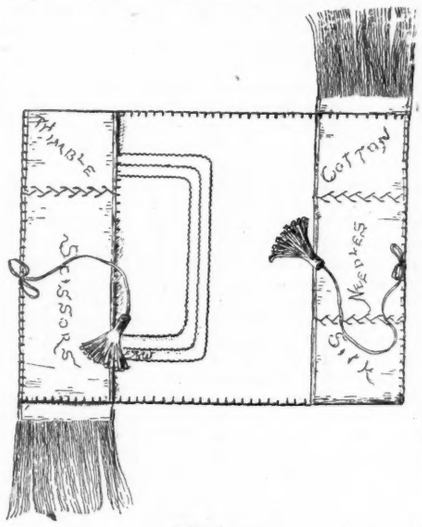


FIG. 1.

wide and seven inches long, twelve inches of light pink satin ribbon one and three-fourths inches wide, and a piece of green satin ribbon of the same dimensions. The ribbon is used to face the ends of the chamois, the extra length being fringed out. It is then divided on the inside, into little pockets by rows of feather-stitching done in pink silk on the green ribbon and *vice versa*. The buttonhole stitching around the edge is also done with silk. The leaves for the needles are made of pink and green flannel and buttonhole stitched, care being taken to fasten them to the ribbon only so that the pocket for the scissors can be reached. The strings and tassels are made of chamois, the tassels being formed by cutting one edge of a strip of chamois into slits, rolling it up tightly and fastening it to the string. Fig. 2 represents an emery bag made of pink ribbon and fastened to a piece of chamois on which has been featherstitched green ribbon as described in the construction of the needlebook. The lettering on both the emery bag and needlebook are done in gilt, but may be dispensed with if so desired.

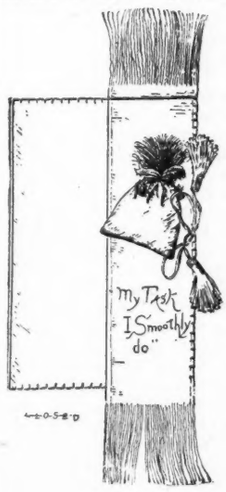


FIG. 2.

For Baby's Comfort.

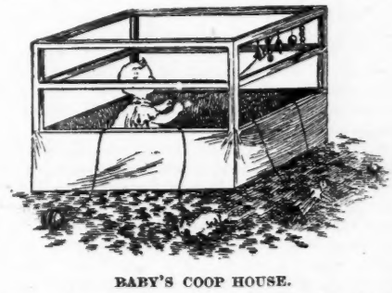
DOROTHY LINCOLN.

One afternoon I was visiting a friend, when with a bright smile, she dropped her work and said: "Come up stairs with me, I want to show you something I have made for baby when he is old enough to sit alone, something which the children call a coop house. There is no patent on it, and it is a great help in caring for a baby." The coop house consisted of a shallow box, 12 inches deep, outside measure, and 27 by 36 inches inside measure. For corner posts my friend used shingle binders with one corner planed off a little, but any pieces of wood about one and one-half inches square and as long as you desire the coop house to be high will answer. Ornament these corners as desired. The inner sides and ends of the box are padded with batting or pieces of old quilts or bed puffs putting very little in the corners, but covering well the top edge of the box. Some padding may be put on the outside of the box. Cover with a strip of bright cretonne or furniture print, long enough to reach around the box allowing for a seam, and three inches wider than twice the width of the sides of the box. Turn the box, bottom up, and tack one edge of the covering material around the edge, making tiny plaits at the corners and turning under the end of the strip. Turn the box right side up, carry the covering over the outside smoothly, and inside, tacking to the bottom of the box. Cover the corner post first with padding and then with covering material. Secure the covering by tiny tacks, or let it join at the corners and sew over and over.

Nail the corner posts in each corner of the box. Select four bars the length of the box from the outside of corner pieces, pad and cover the same as the corner pieces, nailing one at the top of corner pieces on each side and the others half way between the top bar and top of box. Select four other bars which should be as long as the width of box outside of corner pieces, and the thickness of the side bars added to that. Cover like side bars, except that the covering must be long enough to cover the ends of bars neatly. Nail the end bars on a line with side bars. From pieces of old puff make a mattress just the size of the inside of box. On the bottom side, three or four inches from the edge, sew a row of buttons about six inches apart with one at each corner. Cover the top of the mattress with a piece of colored flannel large enough to come down over the sides and button there. Cut a square piece out of each corner of the blanket large enough to make it fit smoothly over the corners of mattress. Use blanket in cold weather, but bright-colored ticking for summer. On the outside of one of the top bars insert tiny hooks about six inches apart, on which to hang, by brass rings, a curtain, when needed to keep a direct draft of wind from the baby, or the light from his eyes, as when tired out with play he lies down to take a nap.

Across one end of the box, just below the top bar, tack a piece of stout web elastic to which is fastened several toys, such as bright-colored balls and tassels, some tiny tinkling bells, and a doll or two. Each thing, except the bells, should be attached by a strong cord a few inches long and the other end of the cords sewed to the elastic. To the center of the elastic sew a piece of braid or tape long enough to reach diagonally to the bottom of the other end of the box. Leave this end free, and the little one will find no end of fun in pulling the string which will set the bells in motion.

Fasten a caster to each corner and I think you will agree with me that baby's "coop house" is far superior to the ordinary padded boxes used for this purpose. The box is deep enough to keep off all drafts and to afford a good support to baby's



BABY'S COOP HOUSE.

back. Above that, the rails allow a free circulation of air, and admit light enough for baby to enjoy his toys without being obliged to stand on his feet to do so. They also assist the little fellow in getting on his feet. Unless taught to climb by older children it will be some time before a baby will trouble much by climbing. Furnish baby with a few toys, a doll, a soft bright ball, a few cloth animals, and let each toy be securely fastened to the coop house by a strong tape about two feet long, one end of which shall be sewed to the toy, the other tacked to the top of the side or end pieces. Do not have too many toys, nor secure them by too long strings. Fasten each one as far distant from its neighbors as possible, or baby will snarl the strings.

When a child has become thoroughly tired of its present playthings, put them nearly all away and bring out a few other ones: after a few weeks absence the reappearance of the old toys will be

hailed with more joy than would the advent of new ones. One of the best toys for a small baby is a home-made rattle. Take a smooth stick six or eight inches long, wind smoothly with bright flannel or wool goods. Procure a few small round boxes, and in each put three or four shoe buttons, wind each box with yarn or very fine strips of wool goods until perfectly round, and cover smoothly with bright-colored flannel. To one end of the covered stick fasten as many half-inch wide strips of flannel as you have boxes. To make them sufficiently strong, hem each edge on machine, or fold and stitch through the middle. Have each strip about four inches long, and to the free end attach a covered ball, matching the strip in color. This makes a very attractive rattle, and one with which the baby is not likely to get hurt, as with metal ones. The handle should be sufficiently covered to make it soft. Strings of spools hold a wonderful fascination for little folks. I am reminded of one small country maid who took an immense amount of pleasure, in stringing her spools and hanging them out in the sun in the day time, and around the kitchen stove at night, in imitation of drying apples.

Easter Attire.

Easter comes so very early this year, it is pretty safe to predict that it will not be graced by the usual number of straw hats and bonnets, though a few of chip have been displayed for some time, heavily garnished with silk and velvet and wintry-looking plumes. One of the most novel of these has a shirred silk crown, combined with a flaring, wavy brim of chip, outlined by a narrow band of feather trimming, while over the whole *chapeau* are scattered tiny, curling tips, wherever a place for them can be found.

The most of the dainty headgear prepared for the first Sunday in April might, however, be termed "between season hats," the full, puffed velvet crowns varying little from those worn in the coldest weather, but to which a lightness is given by fancy open-work brims, covered with substantial silk lace. Like the new gowns, the latest creations in millinery recall the Directoire and 1830 periods, and a fresh young face peeps out with demure fascination from beneath the exaggerated brims and nodding plumes. A typical Directoire hat has a large, flat crown of green velvet, adorned with five rows of gold and silver braid. The brim, fashioned of wired silk guipure, is rolled slightly in the back, and apparently secured by a knot of black satin ribbon, so arranged as to rest upon the hair. On the left side is placed a green velvet bow, or "ears," held by a large gold buckle, and surmounted by a cluster of three-quarter length ostrich tips. A more modest hat of brown chip or silk may be given the *cachet* of the season by a fall of black silk *Point de Géne* lace laid around the brim, which is generally formed of wired velvet rolls, and turned up in the rear with a knot of brown velvet. Black feathers are then applied in profusion, and a bunch of crimson peonies nestles coyly on one side, or else purple violets are scattered loosely and caught in place, to appear as though thrown there.

The chic girl addicted to toques, will likely select the striking shape known as the *Henri Deux*. This is invariably of velvet, and often brightened by a quantity of sparkling jet, while on the left side bristles a small tuft of feathers, or panache of tiny blossoms, held by an ornament of Russian enamel, set in gold, for imitations of Slavonic styles still prevail to some extent. Simpler, but more becoming, are those that have a frill of soft velvet box-plaits around the edge, and are tied around with velvet in a bow on top, to which spring-flowers may always be added, as fancy dictates. Bonnets are extremely small, and the best milliners trim them with a knot of ribbon or velvet in front, and a high pompon on each side. Hat bows seem more pronounced and aggressive than ever, the newest taking the name and form of "Midas Ears." These are usually of velvet, cut four inches long and three inches wide, while they are shaped to a point at the top and round at the bottom. They are made double, and a bit of stiff wire is inserted down the middle of each, these being twisted together for a stem.

The "rabbit-ear" bow is also fashionable for both hats and the backs of bodices. It consists of five pieces. Two upright double ends, four inches long and two and a half wide, folded down the center, and shaped and wired like the Midas ears; two lower loops, three inches square, and a cross piece of the same size. Loose weaves appear to be a feature of the new spring woolens designed for suits; basket clothes, and what our English cousins call "hop-sacking," taking the lead. They resemble mixed tweeds, or are braided in diminutive checks. The most popular hues are green and violet, either in one solid color or combined together in alternate blocks and "shot" effects. Other colors, too, are lighter than those usually worn in the early spring, even the old favorite navy blue giving way to a light, grayish blue, or one shot with pink or green. Contrasting, inch-wide borders are on many new fabrics, to be used as trimming.

A stylish tailor-made gown of sacking is fashioned with an all-round habit basque, either single or drouble-breasted, that has flap seams in the back, and the fronts cut away to show a waistcoat of plaid or dotted wool. There is a revers collar, and the sleeves are coat shape, with excessively large tops. The English bell skirt clears the ground, and flares out so that it measures four yards around the bottom. If of double-width goods, it is cut with a broad front breadth, sloped toward the top, a narrow gore each side, and a wide back breadth, also sloped on each side. It is lined throughout, and trimmed with rows of braid or ribbon, in graduated widths. Horn buttons matching the chief color in the material, are used on these serviceable dresses.

The Columbian and Butterfly capes, described last month, are undoubtedly the most chic outside garments this spring, but jackets will always be preferred by many. These are liked of grayish-blue sacking, or neutral-tinted cloths, shot with bright colors. They are now cut forty inches in length, double-breasted, and straight in front, with the back flaring below the waist, to give room for the new expanded skirts. The back has no seams down the middle, but is a single broad form, gradually widning o n each side to the end. The neck is finished by a close standing collar, below which falls a frill of velvet, while the jacket is fastened with shell buttons.

Every Day Dishes.

Pepper-Pot.—This dish, which is of Philadelphia origin, like many old-time dishes, deserves to be better known. It is a soup by courtesy, an *olla podrida* in good truth, and, like Sam Weller's veal pies, "werry fillin' at the price." Cover a fifteen-cent knuckle of veal and three pounds of tripe with eight quarts of water; simmer eight hours, by which time it should have reduced to six quarts. Strain, and set away over night, when you must remove the fat, and put the jelly under it over the fire with eight button onions, a pint of raw potatoes cut in dice, three cloves, six pepper corns, a sprig of thyme, marjoram, savory and tarragon tied in a thin muslin bag with one bay leaf, three tablespoonfuls of celery minced, one of parsley, and the tripe cut in dice; let this cook until all are tender, and two minutes before serving, throw in forcemeat balls made by mincing a pair of parboiled sweetbreads, some of the tender veal, melted butter, seasoning, and a beaten egg to bind the ingredients together. Flour the hands, roll into small balls, and cook for two minutes in the boiling soup.

Jellied Fish.—This makes a nice lunch, or supper, for a spring day when the weather is just getting too warm for cold winter dishes. Buy a four-pound cut from the nape of a large halibut; wash thoroughly and lay in cold water, well salted, for an hour. Wash in fresh water, and lay in a granite stewpan; cover with cold water, add two onions stuck with six cloves, a whole red pepper, four ounces of butter, a bunch of parsley tied up, a seasoning of salt, and a lemon cut in slices. Simmer until the fish is done, and lift without breaking into a deep dish. Boil down to less than one-third; beat the yolks of five eggs with the juice of two lemons, add it slowly to the hot liquor and thicken slowly on a slow fire. Pour over the fish and stand in a cold place until it jellies. Serve on lettuce leaves with mayonnaise and thin bread and butter.

Corned Beef Hash.—There is a great difference between the right and the wrong way of making this dish. The right way is so very, very good, and the wrong way so very, very bad. It is not necessary to "catch your hare," but it is oh, so necessary to first cook the meat properly. If one buys meat only for hash, a "plate piece" is the best and cheapest. Cover it with plenty of cold water, simmer slowly, until the bones drop out, and let it stand in the water until cold. Then chop the meat in the proportion of three-fourths lean and one-fourth fat, freeing it from gristle and strings; lay this aside and chop half as many potatoes in bulk; mix them together lightly in a bowl, with a broad-bladed knife, never pressing or spatting it. Put it in a pan with clear beef fat enough to keep it from sticking to the pan; set on a very moderate fire, or half way back on the range, cover tightly to keep in the steam, and prevent the potatoes from discoloration; the seasoning should be done as nearly as possible in the mixing bowl. Those who like the flavor of onion, may mince one and fry it in the fat before putting in the hash.

Savory Steak.—Put several thin slices of nice bacon in a hot frying pan, and when beginning to curl, add two good-sized white onions, or a single small Spanish onion, cut in rings; when beginning to brown, add a pound of lean steak cut into collops and beaten with the back of a knife until the fiber is somewhat broken; season with pepper and salt, and when this, also, is cooked a rich brown, add sufficient water to form a rich gravy; simmer until the meat is tender, sprinkle over a tablespoonful of minced parsley and the juice of half a lemon. The fact that this recipe was given a friend by a native cook of Brazil will not, we hope, prejudice anyone against it as a "foreign mess," until they have tried it.

Catskill Indian Pancakes.—An old lady, past the allotted threescore years and ten, gave us the recipe for these, and very good they are. Into half a pint of buttermilk put three handfuls of yellow meal and three tablespoonfuls of wheat flour and mix thoroughly; break an egg into the mixture and beat well, but do not beat the egg separately. Add three tablespoonfuls of boiling pork fat, beat briskly again, and add the other half pint of milk; take a heaping teaspoonful of saleratus, make it free from lumps in the palm of the hand, using the bowl of the spoon, shake it over the batter and mix again. If not stiff enough, add a little more meal, and bake at once.

To Corn Beef.—Make a pickle in the proportion of one pound of fine salt, three-fourths of an ounce of saltpeter and one-half pint of molasses to every gallon of water; boil, skim and pour over the meat when cold. If you want to smoke the meat, leave it in the brine first for thirty days. Meat pickled in this way can be used to fry, or broil, at any time out of the brine. Cane molasses, or its equivalent in cane sugar, must be used. Syrups, or glucose, where acids are used in the manufacture, will not do. This is a recipe of a New Jersey gentleman whose corned beef was celebrated among his friends and neighbors.

Scotch Cakes. — These will keep for weeks — locked. Beat to a cream one and three-fourths of a cup of butter, two cups of sugar, two well beaten eggs, a wineglass of sweet milk, a pinch of salt, and the juice of half a small lemon. Sift half a teaspoonful of baking powder with enough flour to make a stiff batter, stir well, and then knead, or mix a little stiffer so that you can mold it. Take a bit of the dough the size of an egg, pat it to an oblong shape half an inch thick, pinch the edges lightly with the fingers to a sort of scollop, press lightly some candied caraway comfits on top, and put in a greased pan; bake ten or twelve minutes in a moderate oven. Watch the baking so that they bake only to a delicate brown.

Worth Remembering.

Lemons will keep fresh for weeks if covered with water.

Nasturtium leaves are beautiful for garnishing fish and meat.

For taking blood stains from white goods nothing equals kerosene.

Never put left-over food in tin vessels.

Vegetable, scrubbing and other brushes should be kept with the bristles down.

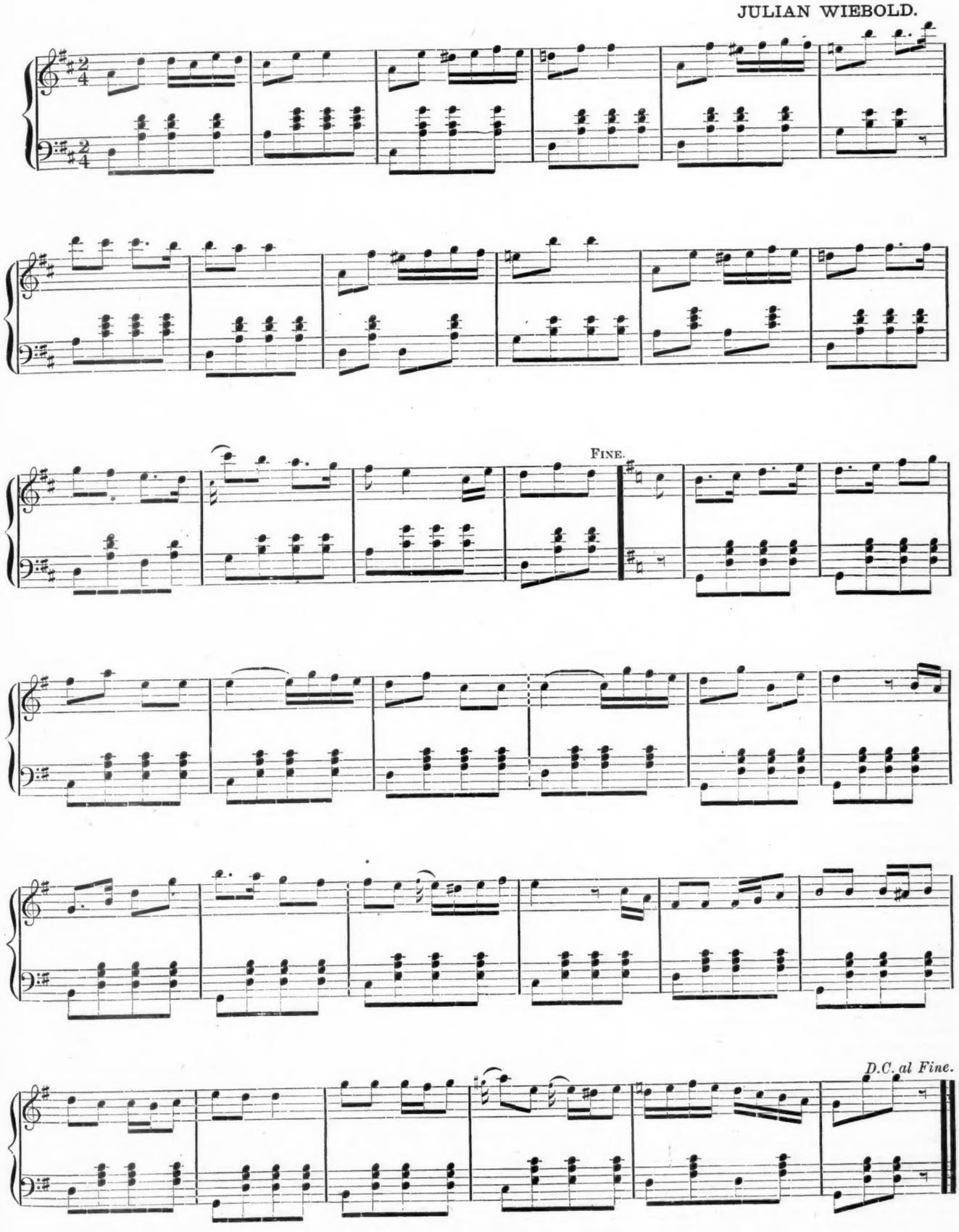
Dip fish in boiling water for a minute and the scales will come off more easily.

Sadirons will not scorch if they are first wiped on a cloth saturated with kerosene.

Rub soft, not melted, lard over the top of bread before baking, and wrap in a damp cloth with a large dry one over after baking, and there will be no hard crusts. Keep bread in a covered box.

WRITTEN EXPRESSLY FOR AMERICAN AGRICULTURIST.

HAPPY HEARTS POLKA.

JULIAN WIEBOLD.

Copyright, 1893.

The Easter Cantata.

AGNES CARR SAGE.

"Mother, isn't it almost tea time?"

"Yes, Gabriel, but there is nothing in the house. We ate the last bit of bread for dinner, and I can get no more until this work is finished." The woman sighed as she bent more closely over her fine stitching, and thought of the rent nearly due and other pressing necessities, for which there was no money in the purse.

Then as a shadow gathered on the boy's countenance, she added more cheerfully, "But the dress is nearly done now, and I shall take it home immediately. Mrs. Benedict will be sure to pay me to-night, and then we shall have a nice supper of muffins and eggs—Easter eggs, Gabriel!"

Still the cloud did not leave the pale young face, and the sunny curly head of the twelve year old lad leaned more wearily against the back of the armchair, drawn close to an open window, for it was a soft, warm April day.

"It seems a shame, mother," he exclaimed, "for you to work so hard, and a great fellow like I am to be nothing but a burden to you. But who wants a miserable, useless blind boy!" A great sob rose in his throat, while his dark, sightless eyes were turned mournfully toward the low chair in which Mrs. Minturn sat.

"My dear child!" she cried, "don't talk like that. You well know that you are the only comfort I have in the world, and I should be wretched without my nightingale to cheer me with his happy songs." "Yes, but singing is no real use, at least to me," sobbed Gabriel. "It might be, perhaps, if I had a violin and could go about the streets. Then I believe I could earn a hatful of pennies."

"Never, never, while I live!" cried his mother, almost fiercely. Gabriel said no more, and just as the last rays of the setting sun shone through the window of her small, third-story room, which looked out on an old-fashioned church-yard, Mrs. Minturn folded her work and rose.

"I must leave you a short time, son," she said. "But I do not think you will be lonely, for it is Easter Even, and the chorister boys will certainly hold a rehearsal in the church, which you can sit here and listen to." "Oh, I hope they will practice the beautiful Easter Cantata!" exclaimed Gabriel; "and do you know, mother, I sang the solo in it, over to myself, quite correctly!"

For a moment, his face shone with enthusiasm, for to him, shut out as he was from so many beauties of this lovely world, the love of music amounted almost to a passion, while his ear, like that of many blind people, was wonderfully correct, although untrained. But as the door closed upon his mother the happy glow faded, and, all restraint removed, with a low despairing cry the boy bowed his head upon the window-sill. "It is so dreadful always to be a burden! always to have to be led round and cared for!" he groaned. After a little his grief expended itself by its own vehemence. "But blind people must be made for something," he said at last, "everything and everybody has a use, the minister says. I wish someone would tell me what mine is."

At that moment, from the neighboring church, there suddenly came a burst of glad young voices, and softly, sweetly, the notes of an Easter carol floated up to the window of the high tenement house. As Gabriel held his breath to listen, he caught the words—

"Christ the Lord is risen again,
Christ hath broken every chain!
Hark, angelic voices cry,
Singing evermore on high,
Alleluia!"

Gradually the troubled look faded from the boy's countenance, and, as one walking in his sleep, he rose from his chair, and groped his way to a corner where stood an alpenstock of white wood. Taking this in his hand, he opened the door and felt his way down two flights of stairs, then out into the street, where the twilight was gathering, murmuring to himself meanwhile, "The voices are calling me, and I must follow."

The old, weather-stained church, with its now unused graveyard, stood far down town in a crowded, unfashionable quarter of the great city; but it was still famous for its fine music, and every Sunday saw many private carriages thronging the narrow street, and crowds of well dressed people filling the grand old pews, not only to worship, but to hear the celebrated boy choir. Its leader, Carrol Seaman, possessed a most marvellous soprano voice, as clear and sweet as a silver flute and of remarkable compass. Recently, however, symptoms of this charming voice giving out had been only too evident. Twice it had failed on the high notes, and some of the other boys had ventured to wonder who would be young Seaman's successor. To hint, though, at anything of the kind, made the youthful leader furiously angry, and he proudly declared that he would "soon be all right again," and they "needn't think they were going to have a show yet awhile just because he had a slight cold."

On this Easter Even, the boys were on hand early for the Saturday night rehearsal, and amused themselves until the choirmaster arrived by swinging on the iron gate and jumping over the moss-grown tombstones, many of which were level with the ground. "Hello, fellows, who has brought his offering for the Easter box?" asked a tall youth, suddenly coming up and shaking a mite chest over their heads. "You know we all promised Dr. Darling to save up something during Lent, toward some charitable object."

"I forgot," grunted Teddy Slocum.

"Well, I'm up to time, and there goes a whole bag of marbles," said Victor Sinclair, dropping in a silver dollar. "What have you given up, Hal?"

"The biggest football you ever saw," replied Harry Jessup, following Victor's example.

"And my silver quarters mean rabbits—daisy chaps, all white, with pink eyes," piped a tiny little lad, the baby of the choir.

"Well done, boys! I think you have behaved first-rate," said the first speaker, as most of the youths put something in the box, "and so will Dr. Darling. But where is Seaman?"

"Dun-no," replied several laconically.

"I do, then! Carrol is keeled up with a sore throat," piped up the tiny chap again.

"See here, Shrimp, do you know what you are talking about?" asked the older boy, sternly, and using the name by which the little fellow was generally known, although he revelled in the astounding cognomen of Anthony Jehoshaphat Peters.

"Course I do, and you needn't be so sharp, Neil Greyson, if you are first alto. Mrs. Seaman told my sister this very morning that Carrol had a cold and was hoarse as a frog."

"What's going to become of the Cantata solo, then?" cried Teddy Slocum.

"You may have a go at it yourself, Ted," retorted Neil. But at that moment Mr. Sylvester, the choirmaster, came up the street, together with some of the men who sang tenor or bass, and the boys trooped after them, into the cool, quiet church, and took their places in the stalls.

The sanctuary was decked for the spring festival, and, although the great nave was dark, the chancel was lighted and looked most bright and beautiful with masses of pink and white azaleas, and fragrant Easter lilies heaped against a background of richest green, while the font fairly overflowed with luxuriant creamy roses. Mr. Sylvester instantly missed his chief soprano, and asked for Carrol Seaman. Eagerly little Anthony Jehoshaphat poured forth what he knew, while the master's brow grew dark, and he stamped impatiently.

"This is a pretty how-de-do!" he cried. "What business had he to catch cold just now! Our whole Easter music will be ruined, particularly the Cantata for the evening. There is not one of you capable of taking his solos." Tears actually sprang to the good man's eyes, for, though often unreasonable, he was wrapped up in his work, and was now sorely chagrined at this overturning of his plans for a most appropriate and elaborate service. Then came a note from Carrol himself, saying:

Dear Mr. Sylvester: I am so sorry, but my voice is gone entirely. Teddy Slocum will have to take the Cantata solo. Yours regretfully,
Carrol Seaman.

"Teddy Slocum, indeed!" stormed Mr. Sylvester, "might as well give it to a cat!" at which rash remark, Teddy flared up, turned sulky and refused to open his lips.

"Such a set of young scapegraces are enough to drive a man crazy!" groaned the much tried teacher. "But we will begin with the carols, and then Victor Sinclair shall try what he can do with the Cantata solo. Somebody must take it."

Softly, dreamily, caressingly, the notes from the great organ floated through the lofty arches, and brightly and clearly the volume of fresh, boyish voices burst forth in the glad Easter refrain,

"Christ the Lord, is risen again,"

singing with all their hearts and souls. This was followed by the opening chorus of the Cantata, but neither Victor Sinclair nor Teddy Slocum was destined, on this occasion, to distinguish himself in the soprano solo. For just as a trio consisting of Neil Greyson, Harry Jessup and little "Shrimp" Peters had finished a beautiful responsive part, and Victor was about to attempt his new role, suddenly, away down in the darkness by the door, arose a low, but singularly clear and thrilling voice, and, wonder of wonders! it took up the strain, and sang with perfect accuracy the "Angel solo": "Why seek ye the living among the dead? Are the works of the Lord now no longer remembered? But let your hearts be glad and full of comfort. Ye are seeking the Lord, but he is risen again," etc., while the choristers gazed at one another in startled wonder and surprise.

"What is it, Neil?" asked small Anthony, turning a pale little face to the chief alto as the words ceased. But Teddy answered,

"Some of Carrol Seaman's tricks, I bet a nickel! He has pretended to be ill, and then come here to scare us all."

"That did not sound like Carrol's voice," said Neil.

"I will soon find out!" cried Mr. Sylvester. "Whoever it is, he has a rare, sweet way of singing!" He strode hastily down the middle aisle. And what did he find?

Only a fair-haired, shabbily-dressed little fellow curled up comfortably in one of the back pews, his head resting against a pillar, and a smile of perfect content playing about his lips.

"Hello! what are you doing here, my little man?" asked the choirmaster, roughly, but not unkindly. But the question seemed to startle the boy from a sort of reverie, and Gabriel Minturn, sprang to his feet, with a frightened, bewildered look.

"Oh, sir! oh, sir!" he stammered, "I did not mean any harm; I just crept into the church to hear the beautiful music; and sang out myself before I thought. I forgot entirely where I was. But I am very sorry."

"A true musician," thought the master; and then, as something in the movement of the small hands feeling for his staff caught his eye, he asked suddenly, "Can it be that you are blind?"

"Yes sir, but I can find my way; and I will go home at once, so as not to trouble you any more."

It was in a far more gentle tone that Mr. Sylvester then spoke:

"Poor child! But I do not want you to go. I wish you to stay very much, and if you will, to come and sing with the other boys, in my choir."

"Sing in your choir! Oh, could I?"

"If you sing everything as well as you did that solo from the Redemption, just now. Where do you live?"

"Right next door, and I was feeling so badly because my mother is poor, and I am blind and cannot help her. Then I heard the Easter carols, and came in, to listen better, and they made me quite happy again. There is nothing like music to cheer one, is there, sir?"

"No, nothing," responded Mr. Sylvester heartily, "and if you will sing for me, and I find you capable to take the place of the leader I have just lost, I can promise you $20 a month, which may assist your mother a great deal."

"Really, sir!" The master thought he had never beheld such a radiant countenance as was then turned upon him. At his request the blind boy sang again, rendering a hymn with so much expression and natural sweetness, that at the end he nodded approvingly, saying: "You will do."

Five minutes later, Gabriel, feeling as though he must be dreaming, found himself seated in the first stall, next to Neil. He was warmly welcomed by all the choir, for they were good-hearted boys, and felt deeply touched by the newcomer's sad infirmity.

Gabriel had had no training, and sang only by ear, but he had listened to the choir practice so often, that he knew all their familiar chants and hymns by heart, while his quick ear caught what-

ever was new with marvellous rapidity. Mr. Sylvester was in ecstacies. "I never thought anyone could fill Carrol's place," he said, "but in time this boy will far surpass him."

Mrs. Minturn was detained longer than she expected, and on her return, was somewhat alarmed to find Gabriel absent. Her anxiety was quickly changed to joyful surprise by the entrance of the boy himself, flushed with delight and so excited he could hardly speak. By degrees, however, he managed to tell his story, adding, "And now, mother, you need never work so hard again; for Mr. Sylvester says I have a fortune hidden in my throat, and I can be of some use if I am only a blind boy."

"Heaven be praised!" cried his mother. "It seems like a miracle, coming just when we need it so much."

Gaily the Easter sun came dancing from the rosy, golden East, but it shone no more brightly than did the star of hope in the third story back room of the old tenement house. And never was there a happier, prouder mother than Mrs. Minturn as she sat in the flower-decked church and watched her boy, together with Victor Sinclair, leading the long procession of white robed choristers. Then when he stood up and poured forth his glorious young voice with all the abandon and unconsciousness of a wild bird, she was sensible of the thrill of pleased surprise that ran throughout the vast congregation. But it was in the Cantata, in the evening, that Gabriel won his fairest laurels, as he sang with his whole soul, perfectly unconscious of a dark, angry face that scowled at him from a side pew. There, half hidden behind a pillar, sat Carrol Seaman, so muffled up as to be almost unrecognizable; for the former leader now knew that his voice would never be the same again, and even while the thought was gall and wormwood to him, he could not resist coming down to the church to, as he expressed it, "hear Ted Slocom make a fizzle of the Angel solo."

What was his astonishment, then, to behold a stranger in his old seat, and a pang of jealousy darted through his heart when Gabriel's clear, rich notes fell on his ear and he caught enthusiastic whispers of admiration on every sids.

"*Le roi est mort; vive le roi!*" he thought bitterly, and the service over, he would have stolen away without speaking to any one, had not Mr. Sylvester stopped him, saying, "Ah, Carrol, my boy, I can't tell you how sorry we are to lose you! But you see we have secured a promising young novice, a blind lad, with whom I would like you to become acquainted and give him a few suggestions occasionally. You read music and know my method so well."

These words were balm and oil to Carrol's wounded feelings, as the wise master intended they should be, and when once face to face with blind Gabriel, all his resentment vanished, especially when the little fellow said simply: "It must be hard for you to give up your place in the choir, but since you have to, I hope you will help me sometimes so that I can learn to fill the high position you made as well as you have done."

"HELLO! WHAT ARE YOU DOING HERE?"

"That I will," said Carrol, heartily, "I don't mind it so much now I know you are to be my successor, but it would have been pretty sour grapes to hear Teddy Slocum blundering through my parts."

Easter Monday was a gala-day for the choir boys, as they had been invited to an Easter treat at the country home of one of the head men of the church. But not one wore a happier face than Gabriel Minturn, as the iron horse conveyed them to Mr. Merriman's beautiful grounds on the banks of the Hudson, although he could take no active part in the sports. These consisted of an exciting ball-match, a grand hunt for colored eggs hidden in the grass, and then a jolly egg-fight on the lawn, when "crack! crack!" resounded on all sides as a common egg smashed a blue one, a purple warrior took a yellow one prisoner, and so on, until at the end, Harry Jessup came off victor, thanks to a sober little gray egg, which proved to be a regular George Washington, in spite of its modest appearance.

And then the collation! The boys were uproarious over the English pudding-pies and cherry beer, the ice-cream, rabbits and sponge cake and chickens, while Carrol, who was able to be present, although still husky, sat next to Gabriel and described everything so well that the blind boy declared he was as good as a new pair of eyes.

At the conclusion of the feast Mr. Sylvester made a short address, thanking all for the good work done during the past year, ending with: "It is now time to decide what we shall do with our Easter offering. Have you anything to suggest?"

"I have," cried Neil Greyson, "and it is that we use it to pay for a year's tuition at the School of the Blind for Gabriel Minturn. There, he will not only learn to read books with his fingers, but raised music as well, and so become better fitted to be our leader."

"I second the motion," shouted Carrol, "and add five dollars as my share to the fund."

Gabriel was too surprised to speak, but his radiant face was more eloquent than words. He in time proved his gratitude by the way in which he studied and the progress he made during the year that followed.

Mrs. Minturn now lives in comparative comfort, and her son's best friend is Carrol Seaman, who hopes in time to return to the choir as first bass.

Some Bright Examples.

In April, 1868, Horace Greeley presided at a great dinner given in New York city by the American press in honor of Charles Dickens. When the wine was served, it was noticed that Mr. Greeley's glass, which he raised in unison with others in response to toasts, contained a beautiful red rose. When the others drank their wine he smelled his rose.

Mrs. Ernestine Schaffner is a New York city woman lawyer, of independent means, who has chosen for her life work the aiding, free of cost, of prisoners who have been falsely accused of crime. She has cleared and made happy and grateful many an innocent victim, especially of those who were convicted because of being too poor to employ sufficient counsel.

Shortly before President Garfield was nominated at Chicago, a company of noted men visited him at his home in Mentor. The dinner that followed was somewhat more elaborate than usual, and more in accordance with fashionable forms. When several courses had been served, the aged mother of the soon-to-be President suddenly exclaimed: "James, I entirely disapprove of this. When friends visited us in the old times we placed their whole dinner before them at once. Then they could see there was plenty of it. But now, with a tift here, and a snip there, everybody is afraid to eat." The guests were considerably embarrassed, out of consideration for their host's feelings. But General Garfield, with a pleasant smile, said, "Very well, mother, it shall be as you please." After that his state dinners, at home, were served as in the "old times."

George W. Childs, the well-known philanthropist-editor of the Philadelphia *Ledger*, who began his business career as office boy at three dollars per week, speaks thus in regard to his success: "One should first accustom himself not to be afraid or ashamed of any kind of work that is honest and useful. But one may be industrious, and yet his industry may not achieve much valuable result. You should work intelligently—be preparing the way for what you intend to become while doing what lies close to your hand. While I, for instance, was working as errand boy, I improved such opportunity as I had to read books, and to attend book sales, so as to learn the market value of books and anything else that might be

useful to me hereafter, for I always aimed to be one day in a position where I could use my best talents to the best advantage. I fixed my ambition high, so that, even if I did not realize the highest, I might at least be always tending upwards. If you jump at a thing with your whole heart and mind, though you may not be exceptionally able, it is wonderful how much you may accomplish. But if you are half-hearted, you will fail."

The Wonders of Respiration.

S. H. PLATT, M. D.

I know a young man who has attended 25,920 funerals in twenty-four hours—all his own. He died by fractions, and was buried as fast as he died. The day after, he was just as much alive as he was two days before. As fast as he died, he found new life. He had learned that every motion of even the smallest part of his body caused the death of some atoms of that part, and that he had been eating and breathing all through life just to replace those defunct atoms. Then he thought: "Chemistry says that those dying atoms are mainly carbon, hydrogen, sulphur, and nitrogen; and that the air is four-fifths nitrogen, and one-fifth oxygen, and also contains in the ratio of one part to every 3,333 parts of carbonic acid gas. Now, if I could get that oxygen from the air to those atoms, it would unite with their hydrogen to form water, with their carbon to form carbonic acid gas, and with their sulphur to form a sulphuric acid compound. But then I might drown in the water, suffocate in the gas, or corrode in the acid. Indeed, to prevent such disastrous consequences, the vehicle that takes the oxygen to these atoms must bring away these poisonous products thus formed." When he had studied deeper into the subject he learned that this necessary vehicle was the blood. It can, eighteen times every minute, absorb through the lungs five and one-fifth teaspoonfuls of all the oxygen that the air can give it. It can unload even faster, because that can be done through the skin, kidneys, and bowels, as well as through the lungs. Outside, dead flesh decays and breeds maggots, and invisible poisonous microbes, called ptomaines. Within, it is the same, except that the ptomaines usurp the whole field. The blood expels them also. So the funerals of the dead atoms consist in their cremation by the oxygen where they die, and the transportation and expulsion of their ashes and gases into the outer world, together with the microbes that they have generated, 25,920 times every 24 hours.

By this process the air of the room occupied becomes a cemetery in which are buried the ashes, gases, and microbes, together. The gas is the charcoal gas with which Frenchmen suicide, and the microbes are what make rebreathed air so deleterious. My friend's room was 12x12 feet, with ten feet walls, and held just 86,175 breaths, of which 17,233 were of oxygen. But thirty-three pints of the whole air were carbonic acid gas, and in every exhalation he added to them four parts in 10,000 more of carbon gas, which rendered irrespirable 110 other breaths, that he would need to inspire. So that if the room were airtight, in forty-three minutes he would have no respirable air left, because of the excess of carbonic gas. Now, in addition, add the respired microbes, which, in pure air, are often less than one germ in two pints, but which increase to twenty in many supposedly well-ventilated rooms, and even to 600 in close school rooms, and which are more than 100 times as poisonous as the carbon gas, and it is easy to see that the cemetery would need an airing within twelve minutes to drive out these pests. This is not all. In every inspiration he drew in twenty-five teaspoonfuls of oxygen; but the expiration returned only twenty teaspoonfuls. Hence, every minute the oxygen supply was reduced over ninety spoonfuls, with resulting inability to consume the dead atoms, and food wastes in the system, leaving them to decompose and breed extra myriads of disease microbes. Thus, in 191 minutes the oxygen would be entirely gone, but it would cease to support life in fifty-seven minutes, and, with a twenty-candle four-feet gas jet burning, the fifty-seven would be reduced to nineteen minutes in an airtight room.

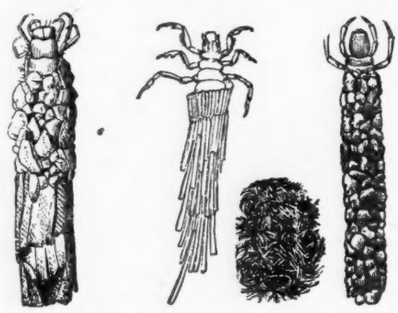
My friend had learned that air moving one-half foot a second (just fast enough not to be felt as draft) gives thirty cubic inches per second. But 2,000 cubic feet per hour are required, which demands thirty-two square inches of inlet and as much outlet. How could he keep a steady supply of pure air in his room and avoid drafts? He thought of quite a number of plans, the two most feasible of which are these: First, he could have a suitable pipe lead from outside to the back of the stove, and sift through small apertures against the heated iron, then be deflected off toward the sides of the room. Again, he could fasten a strip of muslin eight inches wide across in front of the bottom of the lower sash, and raise the sash two inches. He could keep his room door open, and allow a good supply of air to come in through the hall window. Some other plan may occur to the reader.

By attention to these things our young friend lived to be so old that the accumulated ashes of his many funerals would have made an ample burial field for himself, if the microbes had been allowed to have their revenge. The noted camp-cure, which consists in outdoor life day and night, owes its efficacy to the fact that the crevices are sky-high on all sides, and the ample inflow of pure air has restored thousands to the health that they had lost by being shut in and rebreathing their own noxious exhalations.

Fifteen Minutes by a Trout Brook.

R. E. H. LOWE.

Come over the pasture bars and down by the brook; I have a small pet to show you. No, it is not the fish you know so well from tip to tail. But you are a beauty, Mr. Trout, and how easily you float! That is because of the silvery gas bag fastened beneath your spinal column. We also know about the luck stones floating in your bony ears, and that you are able to keep your mouth open so long without drowning because the water passes through the mouth and over that pile of blood-red



HOUSES OF THE CASE WORM.

brushes, or gills, inside, by means of which you breathe. So no wonder you gasp and die as soon as you are taken out of the water. But you need not eye so hungrily that poor little thing down on the bottom, just thrusting his head out of his front door. If you try to gobble him up, you will have your labor for your pains, for, like a flash, his head will disappear, dart after him as quickly as you may.

This little creature at the bottom is well worth our attention. Can it be that the tiny mite built the wonderful stone mansion himself? He must have a glue-manufacturing establishment in his body, instead of an air bladder. See the little house, a two-inch cylinder, a quarter of an inch in diameter, fashioned from gravel stones and sticks, just big enough to hold its occupant. He is quite modest, for, you see, he has put his brown stone front in the rear.

Now take the little builder up, house and all, and hold him in your hand. Try to pull him out of his case, and you will find that he has hooked himself in by his hind feet. If he feels lively, he will try to get away from you by biting hold of the skin of your hand with his strong jaws, and pulling himself and his house along so rapidly that he sometimes turns somersaults in the effort. And now comes the pathetic part of his history. After this lowly creature has spent the most of his life in the water, he suddenly closes up his front and back doors, shutting himself in for two weeks, during which he is perfectly quiet. At the expiration of that time he emerges, an entirely different creature, looking like a small moth. But his strong jaws have disappeared, and he is provided instead with a weak sucking tube. So he flutters around for a few days, and then dies. The female lives long enough to lay her eggs on a stem in the water, so that the young may hatch out in their native element. Before this transformation my pet's name is "Case-worm;" afterwards, "Caddis-fly." She has relations to be found on the bottom of almost any small stream. Some of them live in log cabins, made of tiny sticks; others in houses of moss; and still others in green houses, made of leaves chewed up and fastened together, forming a case with a small opening through the center for its builder. Some forms of these interesting houses are shown in the illustrations.

Some Curious Easter Customs.

An old English custom consists in playing a game of ball on Easter, not by children alone, but by dignified mayors and aldermen. Until within a few years, the game was kept up with great spirit by twelve old women. In the northern counties of England, men parade the streets in twos and threes, and claim the privilege of lifting every woman they meet off the ground three times, receiving in payment a kiss, or, if the maidens be shy, they may buy immunity with a silver sixpence.

In a part of Oxfordshire, as late as 1822, both sexes repaired to the street outside of the church, after evening service, on Easter day, and threw great quantities of apples into the churchyard, those who had married within the year throwing three times as many as the rest. After this singular performance, they went to the minister's house, and were regaled on bread, cheese and ale. Whether the minister received the apples or not, history does not tell us, but it may be that this is the origin of the "minister's donation party." In a royal manuscript or parchment roll of the time of King Edward I., preserved in the tower of London, appears an entry of 18 pence for 400 eggs, to be used for presents of colored eggs.

A German Easter custom is "egg throwing." Two men, who are placed about twenty-five feet apart, are each provided with a large, flat basket, lined with wool and down, throw eggs at each other, and endeavor to catch them in the baskets, without even cracking a single one. Considerable skill is required, and prizes are given to the successful competitors.

A Hint for Reading Clubs.

[A Letter from Louise to May.]

Dear May: I must tell you, before the impression has faded, concerning the most interesting entertainment I ever witnessed. The very first day mamma and I reached Melrose, Cousin Agnes asked me to attend her reading club in the evening. I really didn't care to, for I supposed it would be about as dry as some other clubs I had been in the habit of frequenting, especially when I found they were going to read Shakespeare. I was mistaken. Well, the girls and boys arrived in good time and the club commenced. The subject was "Twelfth Night." One of the boys was first called on to read an essay on the old festival season of Twelfth Night, including the games they celebrated and the jokes they played, especially about the bean king, drawing deftly out the comparison the great author evidently meant to make between life and the Twelfth Night festival. Another member read an entertaining essay of the king's fool or court jester. Another gave a vivid picture of the life of the times written of, and what the great world was doing. We then started on the first act, stopping at intervals to have some one tell us about Illyria, Arion, Taurus, and so on, also the explanation of words and phrases. Next week's meeting is to be devoted to Act. II., and every strange illusion, or name of person or place, has been assigned for explanation or description among the various members. This plan takes but little of each one's time for preparation, and gives us all a vivid impression of the scenes described. I took many interesting notes. Agnes's college brother was a great help in explaining things. He suggests that the club next read the "Heart of Mid-Lothian."

Yours as ever, Louise.

Our Easter Day.

Commemorating Christ's triumph over death and the grave, may occur at any time between March 21st and April 25th, as it is always celebrated on the Sunday following the full moon after the 21st of March. This year it occurs April 2d. The Easter egg, symbolic of the springing forth of life, is supposed to represent the eggs used by the Jews at their feast of the Passover, or the colored

eggs given at New Year festivals by the old Persians. The significance of the lily and passion flower, the one emblematic of purity, the other so peculiarly constructed as to possess various meanings to certain people, is well understood. Easter Day in Rome is ushered in by the firing of cannon and ringing of bells. It is there called "the Day of the Landing of Joy," and begins the festal week of Eastertide, in which various festivities and games are enjoyed, some of them many centuries old. One of the prettiest of these old Easter fancies is the belief that the sun danced on Easter morning, and it is easy to understand how the simple peasants of old saw all nature joyful through the medium of their happy hearts at this their most significant and joyful festal time.

A Presidential Puzzle.

Here is quite an appropriate puzzle for this Presidential year. The successful solver will have learned not only how our President is elected, but a good deal of other interesting information concerning some of the most interesting periods in our country's history. The first prize is $3; the second the AMERICAN AGRICULTURIST telescope, worth $3; the third, a scrap and card album, worth $1; fourth, a Columbian souvenir spoon worth 75 cents; fifth, a pocket knife. Answers should be addressed to "Puzzle Editor, AMERICAN AGRICULTURIST, 52 Lafayette Place, New York city," and must reach the office by May 1st, at the latest. The puzzle consists of two parts, and the following explanation will tell you how to solve it:

(1.) Take a piece of paper the exact size of the inner square. Fold it in the middle. Fold this doubled piece again in the middle as before. Now, while the paper is thus folded, cut it in such a way that when spread out it will contain nine holes, one of which shall be exactly in the center. Place this paper over the puzzle so that the word "delegate" will show through the center hole, and the first word "the" will show through the first hole. If the paper is cut correctly, nine words, making a complete consecutively written sentence, will show through them. Now you have the first sentence of your first answer. In order to solve the remainder of the square puzzle, the figures on the margin must be your guide in helping you choose the right words from the square. The answer to this first part of the puzzle will contain thirty words, and will tell you how a President is elected.

(2.) Now, from out of the letters in this answer, give a list, first, of all the Presidents who have been elected, with the years denoting the time of office; second, members of the Cabinet who have held office under each President with dates of time of office; third, candidates for the Presidency who were not elected. You can use any letter any number of times, but with this condition: The first two letters in the person's name must be found in some one word in the answer to Part 1. For instance, you can choose Lincoln for one President, because the first two letters of his name can be found in the word "national," and the other letters found elsewhere. Keep your lists of Presidents, Cabinet officers, and unsuccessful nominees separate, and against each name give the appropriate year.

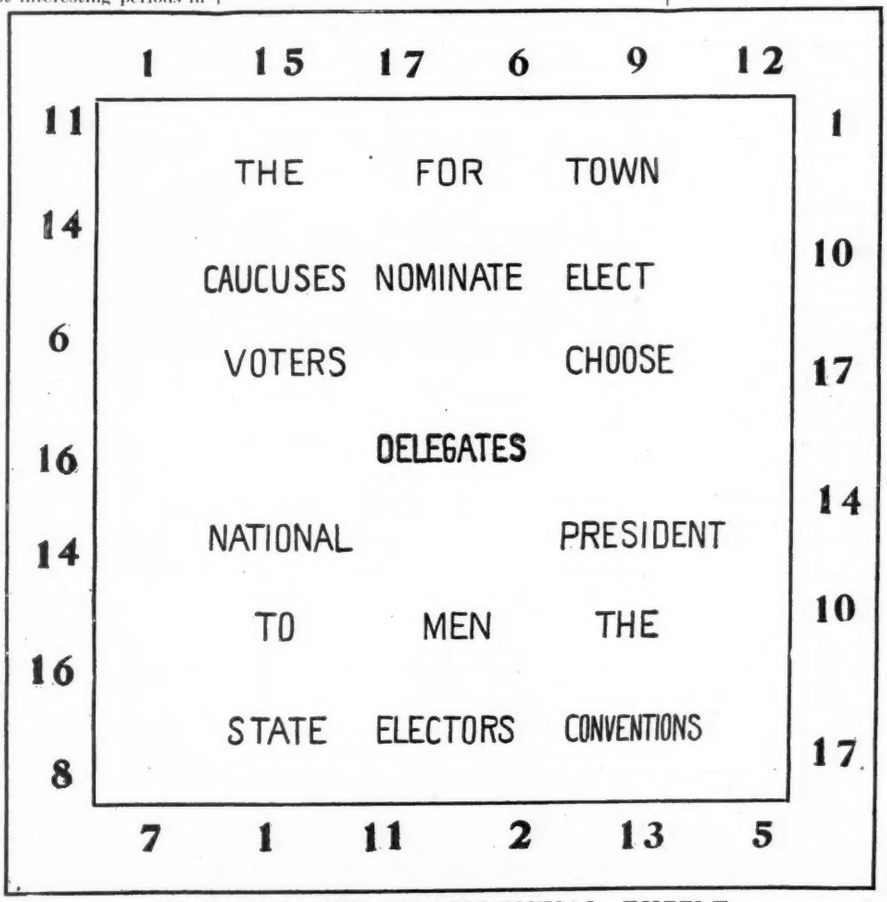


DIAGRAM FOR PRESIDENTIAL PUZZLE.

ANSWERS TO THE DECEMBER PUZZLES.

1. Falcon, mule, or throstle, umber, drill, worm, tiger, seal, ounce, crane, buck.
2. Produce, repent, opera, derm, una, Ct., e.
3. "Give me liberty, or give me death."
4. W-ranny, w-rasse, w-rappage, w-rath, w-reak, w-raw, or s-cold, w-ray, w-rack, w-riggle, w-rangle, or b-roil.
5. Zoril, solar, decoy, xebec, deter, z, os, rod, ilex, laced, robe, jet, ce, r.

ANSWERS TO THE JANUARY PUZZLE.

ADAIR, American general.
ALEE, King of Granada.
ASHE, American general.
CLEON, Athenian leader.
DANA, American general.
DON, British general.
DORIA, Genoese commander.
GRANT, American general.
HEIN, Dutch admiral.
HERMAN, German commander.
HIERO, King of Syracuse.
INA, King of West Saxony.
JACKSON, American general.
JOHN, French crusader.
JOHNSON, American general.
LANGLE, French naval crusader.
LEE, American general.
LEON, Spanish general.
MINA, Spanish general.
MINIE, French officer, inventor of Minie rifle.
NAPOLEON, French general.
PANSA, Roman general.
PEEL, English commander.
PEPE, Neapolitan general.
POPE, American general.
REID, American naval officer.
ROE, American naval officer.
SHERIDAN, American general.
SHERMAN, American general.
WASHINGTON, American general.

THE DECEMBER PRIZE WINNERS.

1. Mrs. Jennie Reynolds, Maine, $3; 2. Mrs. A. Cropsey, New York, $2; 3. Annie W. Brownell, Rhode Island, $1; 4. and 5. H. B. Jordan, New York, and E. W. Lane, New Hampshire, each one year's subscription to the AMERICAN AGRICULTURIST.

THE JANUARY PRIZE WINNERS.

1. J. Fred Windolph, New York, $3; 2. Mrs. Joseph W. Sears, Massachusetts, $2; 3. Hinds Smith, Ohio, microscope; 4. Florence Woodford, Kansas, plush toilet set; 5. Harry I. Bean, California, jackknife.

Guy's Arbor Day.

"Papa," exclaimed little Guy Payson, rushing excitedly into the house, "come out and see the queer bundle the 'spressman just brought!"

"Oh," said papa, laying down his paper; "he's just in time," and he and mamma and Guy all went out together. Papa took out his knife and opened the package, and there fell out several tiny trees.

"Oh, I know," said Guy suddenly, "they're for Arbor Day. Teacher told us about it. Can I plant one, too, papa?"

"Yes," said papa, "one is for you, but I will tell you how to plant it so it will grow successfully. But first, Guy, what is Arbor Day for, and how did we come to have it?"

"Why," said Guy, "our teacher said the State gave it to us to plant trees, 'cause everybody was cutting down so many trees that by-and-by we wouldn't have any if we didn't keep on planting new ones. And some places in the West, on the big plains and deserts, don't even have any trees to cut down, and people didn't live there till a few years ago. But when they went to live there they wanted trees, so they care about Arbor Day more than we do, because trees protect their lands and crops, and also help to bring moisture to them. And nearly every State and Territory has an Arbor Day, but they don't keep it at the same time. But most of them have it in the spring, though some don't till fall. That's what teacher said; but when I was over to Uncle Hiram's the other day, and asked him about it, he said Arbor Day was to plant flowers and vines also, to make the streets and yards look pretty."

"Well, Guy, of course we improve our surroundings when we plant trees, but I think Uncle Hiram has confused the purpose of Arbor Day with that of the Village Improvement Association. I have found that many people do. The real purpose of the two is quite distinct. The association has for its main object the beautifying of our outdoor surroundings. The members unite in doing all they can to make their home surroundings and streets as neat and attractive as possible. So they naturally begin by planting trees and flowers. This in time, often creates such a patriotic feeling of pride for their native towns that the citizens are led to improve its roadways, donate libraries, and do other public-spirited acts. But every town or city does not have an Improvement Association. Nor are the greater part of the citizens members. But nearly every one is interested in Arbor Day, and is willing to plant a tree somewhere from a feeling of national patriotism." "Who was the very first one who ever thought of Arbor Day?" asked Guy.

"Gov. Morton of Nebraska, who, by the way, is our new President's Secretary of Agriculture, and it was first observed in that State in 1872. Then the State Board of Agriculture caused it to be made a legal holiday for that State. State after State soon caught hold of the idea, till now it is nearly universal. And now," Mr. Payson added, "I think we are all ready to plant our trees." He then gave one to mamma, one to Guy, and took one for himself, leaving one on the paper, which he intended to come for later.

"Hooray for Arbor Day!" cried Guy, running on ahead with his tree in his arms. Papa and mamma, each with a tree, followed smilingly after. Then—what do you think?—there was a hurrying movement from behind, and right ahead dashed Rover, the big Newfoundland, his fine head and bushy tail high up in the air, and carrying in his mouth the tree Mr. Payson had left behind. Then papa and mamma and Guy laughed, and Guy cried, "Rover is going to celebrate Arbor Day, too."

The great marble cave recently officially explored in Stone Co., Missouri, contains, among its other wonders, an immense room, not yet wholly explored, partly filled with the mummified remains of thousands of carnivorous animals.

The Grand Onivera.

Midway between the Rio Grande and the Pecos rivers in New Mexico there is a small volcano of very recent date, though now extinct, which lies to the north of the road to Fort Stanton. A lava flow from this small cave extended southwards following a valley, and is a marked feature of the landscape. As one descends into the broad valley on the way to the fort this lava flow is seen in the distance as a narrow strip of jet black in the monotonous straw yellow of the plateau, and soon the traveler finds himself in the midst of it. Its surface is broken into hummocks, ridges and single blocks in such a confused manner that even animals cannot cross it except in one or two places, and the road is turned to one side for a considerable distance before a crossing is found. With the exceptions of a few stunted bushes and lichens no vegetation is found upon the lava and I am convinced that it is but a few centuries old. A Vesuvian lava just cooled is but slightly different from this one.

North of the volcanic cave there are ruins of a town known to the natives as the Grand Onivera about which there are many rumors, many of which are probably groundless. These facts, however, seem established. It was a town of considerable size comparable with the Pueblos of the neighborhood and, like them, it seems to have been an agricultural town depending, of course, upon irrigation for water supply. The irrigating canals are now, however, thrown considerably out of level and if they were reconstructed would not carry water. The striking fact, however, is that there is no water supply visible. The region is so much a desert that even cattle ranches are scattered and the springs are scarce and have a small flow. Not only would it be difficult to find water supply for irrigation, but even a supply for drinking purposes cannot now be found.

The history of this place must be very interesting and should be studied carefully, for at present we know very little that is definite concerning it. I am able to offer a theory concerning it, which from all I have seen of the region seems very reasonable, though it is unfortunately no more than a theory. When the volcano burst forth the town was prosperous, and the people were well supported by agricultural pursuits; but the outburst of volcanic activity disturbed the earth for miles about, and even as far as the town the level of the ground was changed. The lava flowed away from the town, but the underground disturbance extended on all sides and not only destroyed the irrigation works but tapped the underground water supply and cut off even the drinking supply, and an oasis became changed into a desert, like that which lay around. Some such history as this seems to have accounted for the phenomena above described and I wish that this description might come under the notice of some one who would study the region and try to make out definitely the history. RALPH S. TARR, New Mexico.

Customs of the Cuban Negro.

It does not require a long acquaintance with the negro to learn that he is superstitious. Certainly the spirit of independence and the commerce with enlightened foreigners has, within the last few years, had a beneficial effect upon unwholesome traditions, though not eradicating them totally. Unlucky numbers, signs, and dreams, still have their quota of believers.

Fandangos, or native dances, are the main sources of amusement, in which, of course, the women mix equally with the men. The movements in this dance consist in a constant and monotonous rotation, accompanied by a sudden inclination of the bodies to each other until the performers stop from sheer exhaustion. The music furnished reminds one of a hand organ, concertina, and cymbals in action simultaneously. At births and weddings, this is the crowning triumph, and is carried on far into the night. A certain morbid desire to witness the shedding of blood draws a large crowd to cock fights and bull rings, when their insatiate thirst is, for the time being, quenched. The intense excitement attending these events can only be compared to that state of frenzy bordering on insanity. Shouts, yells, and gesticulations, and an occasional irresponsible use of the fists give vent to the passions animating these impulsive people. Seldom is the knife drawn, or, if this happens, more seldom still is it used, for, though a majority of the natives carry this weapon, it is more out of bravado than necessity, and the unfortunate man who commits some atrocity, in a moment of rage, becomes a victim to the wrath of his fellow beings.

Vice exists, to a large extent, in the community, but vicious pleasures are hardly looked upon in the same light as that in which it is viewed by the well-balanced mind of an educated white man. The Spanish government does little, or nothing, to suppress the evil, for there is no direct legislation which bears on the cultivation of the virtues of these sometime slaves, and there is not the slightest check on the prevailing wickedness.

The little dress required by the native consists of a loose pair of pantaloons, a cotton singlet, and a straw hat, and, generally, these articles last for a year or more, being adorned from time to time by many colored patches. The women usually wear simply a light cotton wrapper with a waist band, and a straw hat completes the headgear. Shoes are worn only by the more fastidious, and these are usually of canvas. Childen under ten years of age run about naked, and appear to suffer no inconvenience from the habit. The street forms their playground, and the gutter their curiosity shop.

The homes of the lower classes in Cuba are, as a rule, in a dirty condition. Simple articles of convenience and adornment suffice their wants, and a balmy atmosphere renders superfluous what to the inhabitant of a temperate zone would be absolutely indispensable.

The bath accommodations are furnished by the salt water at the wharves, where numbers of the men go to dive and swim during the hottest portion of the year. I have seen some really wonderful divers among them, and the art of swimming is known to all.

Religion has few charms to draw the black man in her holy folds, unless, perchance, it be the music which swells from the portals of the neighboring church. The primitive form of pagan worship brought from the African settlements, and the barbarous rites which accompanied it have now given place, nominally, at least, to Catholicism, and to whose teachings attention is reluctantly paid more through fear of a future punishment than love for the doctrine. Holy days, while being recognized, are not strictly observed; indeed, festivities of the gayest kind occur on these occasions. EDMUND PARKER, Havana, Cuba.

The Farmer in England and Wales.

Of all the industrial classes in Great Britain, the tenant farmer is most worthy of consideration and sympathy. With a dogged pertinacity he has struggled, year after year, against insufferable land laws and mediæval legislation, against a villainous climate at home and resistless competition from abroad, in a vain and hopeless effort to pay his rent, support his family, and preserve the traditions of an honorable yeomanry. And every season has found him poorer, and the outlook more hopeless. To-day the farmers are organizing themselves, issuing manifestoes, and demanding legislation in their interest. To the grain-raiser's demand for a trifling duty on wheat, the answer is made that the corn laws were abolished fifty years ago, and that question settled forever. It is beginning to dawn upon him that since the days of Cobden the agricultural condition of Great Britain has entirely changed. Then his competitors were at his doors, laboring under conditions similar to his own; to-day his wheat meets in his own markets the wheat of India and Dakota, his fat steer finds a rival in the grain-fed beast of Colorado and Texas, his mutton is bargained against the products of New Zealand, and his fruit is cheapened in his own village by the pears of California, and the apples of Vermont.

Incredible as it may seem to American farmers who are paying from $18 to $25 per month, with board, to a common farm hand, the agricultural laborer in England is paid, on an average, about $12 per month, out of which he boards himself and shelters and feeds his family. This rate of wages has saved the farmer from bankruptcy hitherto, and made it possible for him to till the soil and pay the rent; but it has, at the same time, driven, and is driving, the agricultural labor to city and town. The English farm worker sees, in these days of easy communication, when rustic labor sometimes ventures from the safe tranquility of green lanes and quiet fields to dare the bustle of factory towns and the din of city streets, other men who work for shorter hours amid the attractions of urban life receiving twice his pay, and forthwith he leaves his quiet country home. However provident he may be in other things, the English farmer is a hopeless spendthrift in labor. Last spring, in seed time, I saw two men with five horses working a common seed drill, such as in the United States would have been managed with one man and two horses. Two men plowing—one to manage the team, and one to manage the plow—is not an unusual sight. The last harvest I traveled through the heart of England, and in a day's journey saw only three harvesting machines working in the fields, but saw hundreds of men reaping the grain with sickles, followed by women who bound the sheaves. Much of the hay is mown with scythes and raked by hand, and practically all of it is stacked in the fields, or yards.

The English fields are, as a rule, cleanly and beautifully tilled, but with an excess of labor that the farmer can ill afford; the same work would be accomplished by the American farmer with half the labor, and sufficiently well. Another point, and one counting largely in net results, is the smallness of the English field, necessitating much loss of time in cultivation. In this connection I may observe, what has been often noted by others, that the farm tools and implements here are much heavier and more cumbersome than those in the United States. We have an idea in the United States that English farms are all well tilled, that English cattle and sheep are always fat, and that all the agriculture of this country is after the model of farmers' institutes and agricultural colleges; but there is a great deal of slovenly farming in England, and that scrawny cattle and foot-rot sheep are not unknown in the British Isles.

W. E. HOWARD, U. S. Consul, Cardiff, Wales.

The Hog Prospect in Kansas.

The present high price of fat hogs will, doubtless, stimulate the business of hog raising. A somewhat extended experience in hog raising warrants me in giving a word of caution, especially to the younger farmers, not to rely for their whole income upon raising and fattening large herds for the next two years. The chances are that next fall's crop will be sold at one-half, or less, the present price. This can be done, however, with a profit to the hog raiser, if the conditions are right. It cannot be done upon corn wholly, from start to finish, but with plenty of clover and blue grass, and an abundant supply of good water, hogs can be raised at a profit at two and one-half cents per pound gross, if corn is not worth over forty cents per bushel. The secret is that two-thirds of the gross weight can, and must, be made upon the clover and grass. Many of our farmers are doing this every year, and they are the ones that make farming pay. It is not usually profitable to do it, but upon one occasion I kept forty-seven January pigs; from the time clover was large enough to cut, until corn was hard enough to feed, by cutting and feeding the clover to them in the pen morning and evening. I never have had young stock to do better. If one has about twenty-five acres of either red or alfalfa clover, it will be found profitable to have it divided into two or three small fields by some cheap, movable fence, using each field for ten days or two weeks at a time. This gives a part of it a chance to freshen up, and the hogs will actually eat more of it, which is the prime object.

A. G. CHASE, Leavenworth Co., Kansas.

From the Far Northwest.

In this far Northwestern country, I am sorry to say, we have but few progressive farmers. Our lands are rich, and we can get bountiful crops, at the least expense of labor, of almost any known section of our broad land. This condition of things must soon change, and then it will be a case of the "survival of the fittest." We have an excellent climate, with fertile soil for the production of all of the stone fruits, and most of the varieties of grapes, and with all these a good market. One can get three cents for every fair apple he can place on the market to-day, and more for a choice

article. Eternal vigilance is the price of liberty. This winter, rabbits have completely ruined over 100 of my most valuable apricot trees, something never known in this section before. As a safeguard, next fall, I shall wrap tarred paper around all of the trees. This is considerable work in a large orchard, but, if it prove an effective preventive, it will be well worth the trouble.

F. C. FARNHAM, Kittitass County, Wash.

Picturesque Spots in England.

There are few places of greater interest to the English-speaking race than the extreme westerly point on the Cornish coast of England called the Land's End. It possesses an undying interest for the antiquarian, the historian, poet and geologist. Unlike many other celebrated spots in England, it has not yet suffered from the inroads of tourists, and still remains a superb picture of rugged grandeur. "The first and last house in England" is built within a few yards of the edge of lofty rocks which tower above the sea. This part of the coast is the last which the outbound traveler sees when leaving England by this route; and it is, of course, the first in view on his return. The house itself, as will be seen from the accompanying photograph, is a very modest sort of structure, and is, indeed, not unlike an English peasant's cottage in some parts of primitive England. It has only three rooms, all on the ground floor. It is used principally as a refreshment house for weary travelers, who can obtain sufficient homely fare to carry them on their journey. One room is generally reserved for visitors, and it is capable of accommodating about six or eight persons. It is so far out of the world that the owners never anticipate so many callers at one time. The house is only open during the summer season. It is impossible to stand on the rocks at Land's End and not be impressed with the weirdness of the scene. There is a vast freedom in the sea view, suggesting an unlimited expansion which might well have excited the adventurous spirit of the ancient voyagers in their search after new lands and wealth. Just looming up on the horizon there may be seen on a clear day the faint outline of the Scilly Islands, the very indistinctness of the view affording an additional element of mystery. Here, if we may credit the popular belief, here it was that King Arthur fought that "last battle in the West." Land's End is, as I have said, the most westerly point of England, and it is pierced at its extreme end by a natural tunnel. Between Land's End and the Scilly Islands lie the rocks of the Longships, upon which is built a lighthouse of massive strength. It is, however, no uncommon occurrence for the lantern to be shivered by the mountainous waves which come rolling in from the stormy Atlantic. [Our illustrations are from photographs, sent us by the writer. Fig. 1 is the "First and Last House" in Cornwall, England. Fig. 2 shows the Island Rock near St. Ives.]

F. C. CHAPPELL, London, England.

Fig. 1. FIRST AND LAST HOUSE AT LAND'S END, ENGLAND.

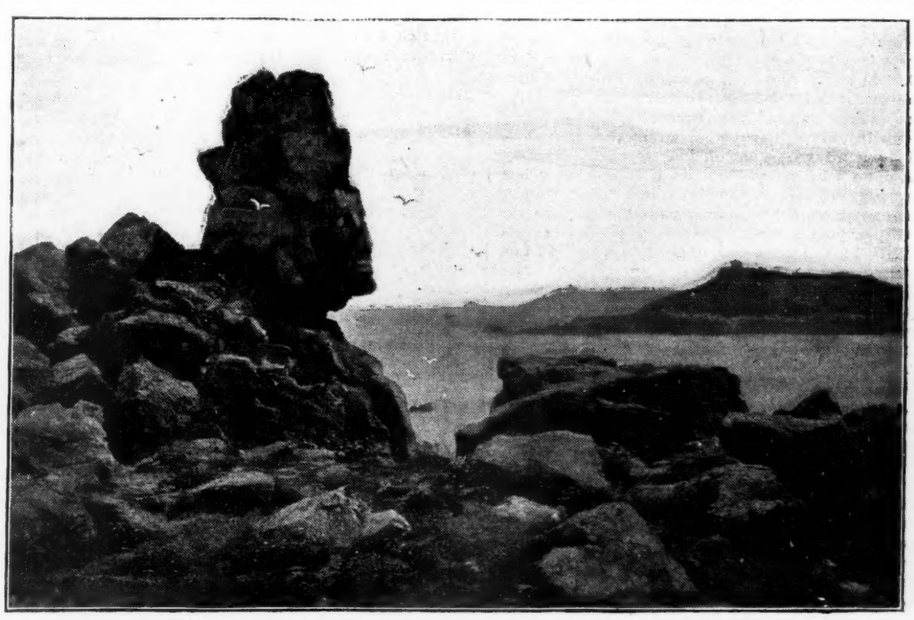


Fig. 2. ISLAND ROCK, NEAR ST. IVES, CORNWALL.

Farming in Nebraska.

Twenty-five years ago Central Nebraska was a part of the great American desert. The past year has been one of prosperity to the farmers in this part of the State, and Hamilton county may be classed among the most favored of any. Crops of all kinds have yielded fully as well as any year of the past. Corn has produced 40 to 60 bushels per acre, oats 35 to 60 bushels. This seems to be the place to raise winter wheat. We can thresh 40 to 55 bushels of wheat per acre. It is only during the past three or four years that the people of this and adjoining counties have grown winter wheat, but now, finding that our soil is fitted for wheat, there will be an increased acreage in the future. On account of the great yield of wheat, the land is booming in price. Good improved farms in York, Hamilton and Polk counties are held at $30 to $35 per acre, and many farms are changing hands at those figures. Those who sell seem to think that they can do better by buying unimproved lands and fit up and sell again. But many find it difficult to select as good homes as they now have. As long as we can raise 40 to 50 bushels of wheat per acre, we do not find any fault with this region. This State can boast of having the best roads in the world. For most of the year one can haul 50 to 60 bushels of corn over any of our roads, and the only time we complain is when the roads are too dry and dusty. Then it is uncomfortable for the driver. We need more good farmers to teach our careless workers how to make crops grow. We have too many who are just holding a farm until their mortgage is due and they are compelled to sell.

M. M. HALLECK, Hamilton Co., Neb.

Corn Culture on the Prairies.

On the rich prairie lands of Iowa I have raised very large crops of corn for the last three years. The first year the crop was 121 bushels per acre, the second year 133 bushels, and the third year 142 bushels. This field has not been manured for nearly ten years, and has been cropped every year. It was plowed very deep, and thoroughly pulverized. The corn was planted in drills one inch deep, and twelve inches apart in the rows. The rows were four feet apart. The first cultivation was one and one-half inches deep, and after that it was as shallow as one inch. The corn was five feet high when it was laid by on the last of June. The leaves reached across the rows, and the roots permeated the soil in all directions. Many experiments have satisfied me that it is best to have all the nutrients in the soil equally distributed from the beginning of the growth of the crop. By this method the roots will find and appropriate the fertilizers as the plant requires them. I have examined many fields of corn to see the effects of different methods of tillage. I have grouped these under three heads: First, listing without plowing; second, plowing without harrowing to fine the soil; and third, plowing and pulverizing the soil thoroughly. There is but little difference in the first two methods, except that on the plowed field the corn grows the most quickly, being ten days or two weeks ahead of the other method. The cultivation in the first two methods was deep, and was done with a shovel cultivator, breaking up the ground thoroughly. The last method the ground was cultivated very shallow and only twice. This field was nearly free from weeds, while the others were overgrown with them. I find that thorough and continuous cultivation is one of the best means of overcoming drouth. Much of the corn in this region is listed. The lister is a double moldboard plow, throwing a furrow on each side, and this has no landside. The half of the land between the resulting hollow furrows is left unplowed, but is covered deeply by the furrows of earth thrown upon it. The corn is planted in the middle line of the hollow furrow, either by a drill attachment to the lister, or by the two-horse corn planter. The ridged field is harrowed after planting, to kill weeds, and the cultivation throws the earth around the corn, thus combining hilling with level culture.

D. J. BISSELL, Page Co., Iowa.

The Culture of Soiling Crops.—H. Riley, Berkshire Co., Mass.: It is a fallacy to suppose that what may require some additional labor is necessarily unprofitable in proportion to the extra labor employed. But this is the only objection that has ever been made to the growth and use of soiling crops for use in a dairy, or for feeding to horses in the summer. It is quite as fallacious to object to growing these crops as to say that 80 or 100 bushels of corn on an acre is not profitable, because it needs more work to gather it. Soiling crops produce more milk and butter than pasture does, in some cases five times as much to the acre of land used; but the labor is very little more than that of pasturing. It is all in the feeding of the cows. And experience has shown that this is no more than two or three cents a cow a day, while the saving of the manure alone gives this back again. By the use of these crops one cow may be kept on one square rod a day, which is equal to 160 days' feeding of a cow from one acre. If there is not profit in this, it would be a difficult matter to say how profit may be made at all.

The Culture of Root Crops.—L. E. Sears, Jackson Co., Mo.: The time will probably come when we shall produce our principle supply of sugar from beets. This will add one valuable crop to the present list, and greatly improve the too short rotation. If it is an object for farmers to pursue, and derive the profit that may be made from it and divide among themselves the $100,000,000 now sent out of the country for this necessary food, they must become familiar with the culture of roots. Nothing is easier. The only needs of the crop are well fertilized and clean soil, and the absence of weeds. With these provided for a root crop which may be used for winter feeding at present, until the country is prepared to make the sugar, farmers will soon gain the skill required to produce the beets, and then the capital needed for the manufacture will flow in as water into a hollow place, by the force of uncontrollable gravity.

Quick Fodder Crops.—G. Weir, Winnipeg, Manitoba.: One of the most valuable summer fodder crops is millet, and the golden variety is the best kind to sow. The mistake mostly made is to sow the seed too late. It is a tender plant certainly, but no more so than corn is, and, instead of being sown in July, it should be put in the ground in May when it will come off in July, and if, as may be done with safety and advantage, clover has been sown with it, this will make a strong growth before the fall, and afford valuable pasture for sheep or young stock. An acre of millet on good soil will make three tons of good hay, that will be worth one quarter more for feeding cows or horses than the best grass hay. But it must be cut when the heads have nearly all appeared, and before the seed has been formed. Half a bushel per acre of seed is the right quantity, as the thicker the sowing, the finer and softer is the hay. It is better to cut it with a reaper, and dry as oats, and bind it in sheaves and shock it for a few days to dry thoroughly, when it may be stacked with safety.

Should We Grow Wheat.—M. Wooster, Trumbull Co., O.: One of the fundamental principles of farm economy is that everything used on the farm that can be, should be produced on it; and as bread is the staff of life this is surely the main product to be grown at home. The policy of every farmer should be to make all the money he can, and spend as little. It must not be thought this is a mercenary thing to do, it is just and right, and what all men are working for, and the key to success is business. Most of us have forgotten the homely advice of that great philosopher, Ben Franklin, and at this time it might be well for farmers to recall his maxims of economy in this time of depression, when economy is urgently needed. Wheat may be made for 30 cents a bushel if 30 bushels can be grown on an acre. This is equal to seven barrels of flour which cost $35. So that a profit is made of $14 on the acre and the year's stock of flour is made at an actual outlay of one and one-half bushels of seed only. If this is not profitable, what will be? The wheat may be sown after early potatoes, and if only half the product named is made there is money made by it.

Crops for Soiling.—J. Wood, Orange Co., N. Y.: The first feeding in the spring for cows is rye sown in the fall, which is fed in May. The clover is cut in June, then the first crop of early sweet corn follows, after which this crop, planted in succession, may be used the whole of the summer, varied by mixed peas and oats sown together, or millet, or clover pasture. The variety of crops for this use is quite large, the only thing to be considered is a constant supply of fresh fodder and variety sufficient to keep the appetite in a vigorous condition. The fodder that is not used while it is fresh, is cured for winter feeding. But this system is not complete without some roots for the winter, by which the succulent feeding is carried on through the whole year. A silo, however, and corn for silage, may be substituted for the roots.

Loss of Feathers on Heads and Necks of Hens.—Mrs. P. M., Lycoming Co., Pa., wishes to know what is the cause of the feathers coming off from the heads and necks of her hens. Probably from the small hen house. It may also be caused by too high feeding with corn. Brush the heads and necks with kerosene, cause the hennery to be cleansed and fumigated with burning sulphur. Sprinkle flour of sulphur and chlorinated lime in the dusting places. Feed milk and chopped onion mixed with boiled potatoes or cabbage.

Clematis Hardy After the First Winter.—Clematis Jackmanni, with all others of its class can be made perfectly hardy in the New England States and southward. To do so, protect the first year's growth by laying it down and mulching it with leaves or any suitable material to keep the frost from it. After the vines have made two summer's growth, it will be perfectly hardy, and can be left on the trellis without any further protection.

Earth Worms in Pots.—P. R. Ammen, Suffolk Co., N. Y.: These troublesome pests are sure to be found where there is plenty of manure. They generally succumb when treated with a liberal dose of lime-water. If air-slacked lime is dusted over the soil until the surface is white, they will not be troublesome afterwards. Where worms abound in hotbeds, lime can be used in the same way with excellent effect. Ten drops of carbolic acid in a pint of water, poured on the earth in the pot, is said to act like a charm, killing all the worms and benefitting the plants.

Red and White Mignonette.—J. T. Young, Dodge Co., Neb.: If any one imagines getting a mignonette with flowers as bright a scarlet as the Gen'l Grant geraniums, or as pure a white as the rocket candituft, he will be sadly mistaken. Color, as applied to flowers, is relative. What is termed a white-flowered mignonette, is a variety with flowers much whiter than the type, and having at first sight the appearance of a white flower. The same is true of the scarlet. These terms must not be taken literally, but used relatively.

Propagation of Oxalis.—S. E. Thomson, Berks Co., Pa.: The pink and white flowered *Oxalis floribunda*, can be readily increased by division. After they have stopped flowering, which is generally in the spring, withhold water for two or three weeks, then cut the tops close to the crown, and divide into small pieces, which can easily be done, as the crown is a mass of eyes. Plant singly in small pots. The bulbous varieties increase naturally, several new bulbs taking the place of the old one. Three or four of these should be planted in a six-inch pot. All the bulbs must have full, free sunshine to flower finely.

Curing Dogs of Sheep-Killing.—Sylvester Forbes, El Paso Co., Col.: One way to cure a dog of killing sheep is to muzzle him in a small yard with a fighting ram, while you cover the dog with a whip to teach him not to attack the ram. Every time the dog shows fight lash him; but let him get out of the way of the butts of the ram. Two or three lessons will teach him not to touch the ram. Try the same plan with a yew or lamb, with and without the ram. But punish him at every attempt at going for the sheep. The lessons with the ram and one or two other sheep, will be pretty sure to teach him not to trouble sheep. Sheep-killing dogs should be tied up at night. Another method is to muzzle and tie such dogs with a short rope or chain near their kennel, placed in the sheep yard so that they can escape from the death-dealing butt of the rams of the flock, but yet can become afraid of the sheep. Still another is to tie a piece of wooly sheepskin snugly to the lower jaw of the dog till he becomes thoroughly disgusted with wool. To make the teaching more plain, put him in the sheepfold during the lesson. Still another plan will be found in muzzling loose dogs. The most effective and never-failing method is to keep only trained shepherd dogs, and shoot all other dogs seen upon the farm. Hunting dogs are the most dangerous and destructive to poultry; but mongrels are the ones that generally kill sheep.

Hibiscus not Flowering.—S. M. Wright, Clay Co., Ky.: The cause of failure of your *Hibiscus sinensis* to flower, after having been taken up from the garden, is a natural one. No shrub will thrive for a season after having been disturbed while in an active growing state. In disturbing its roots you have forced it into a premature rest, and its flowering buds were not developed. New buds will, in due time, form, and the plant will commence another season's growth. If the plants are expected to flower in winter, it will be much better not to take them out of the pot, but plunge them, so that the rim of the pots will be about an inch below the surface. Hibiscus have to be kept pretty well root-bound to flower freely.

The Lily Bed.—F. A. Mayhew, Morris Co., New Jersey.: Do not remove the mulching from the bed. It has saved your lilies from the winter's frost, and now they need it just as much to protect them against the summer sun. The lily wants coolness and moisture at the roots, but resents freezing. The way to meet those requirements is a light mulch in summer, a heavy one in winter.

Planting Gladiolus.—N. Weed, Middlesex Co., Conn.: The corms may be planted from the time the soil is ready for working in spring, until the middle of July. The later plantings will give the best results, as they come into flower when the nights are cool and moist, and at noonday the sun is not hot enough to wilt them, as is the case in July. Besides, when the weather is cool the colors do not run, as they do in extreme heat. For late plantings the corms should be kept dry and cool, and the largest corms saved for the purpose. Very thick corms are the best, as they do not dry out as quickly as the thinner ones. If the bulbs are packed in dry sawdust and the package placed in an ice house, they will keep splendidly, and, when they come into bloom just before a frost, they surpass all other outdoor flowers.

Shade for Young Poultry.—F. R. Brunner, Lancaster Co., Pa.: As the weather grows warmer the poultry raiser provides shade for the chickens. The best shade is such as nature supplies, low-growing bushes, or densely-foliaged trees. But, when these are lacking, boards set up standing against the fence, or building, rough shelters of newly-cut branches with their leaves, and the like, are furnished. Currant bushes are favorite spots for chickens as they grow thickly, and close to the ground. On a hot day, if the chickens are invisible, the currant bushes are a safe guess for their place of hiding.

Weaning Chickens.—W. Pearce, Tolland Co., Conn.: Whether one should wean chickens when they are about two months old, or allow them to run with the hen until she weans them, is uncertain. We have had good results with both methods. If the weather be pretty warm, we prefer to dispense with the services of the hen when the chickens are about two months old, but if the nights are still quite chilly, the chickens may need the warmth she supplies. To us it seems largely a question of weather.

Applying Fertilizer to Corn Ground.—S. Barrington, Yates Co., N. Y., who always has a good corn crop, writes us that he adheres to the following plan, and as it is so simple, others should give it a trial. If he desires to use ashes, hen manure, or commercial fertilizers, after plowing, and previous to the last harrowing, he passes over the field with the fertilizer drill, letting the teeth enter the soil to the usual depth, thus distributing whatever may be applied evenly over the entire field. The final harrowing is then done, the field

marked out and planted in the usual manner. This plan causes the corn roots to send out feeders at once in all directions, and no matter which way they extend, the fertilizer is met with. This is far better than to apply the same amount of fertilizer directly in, above, or about the hill. Furthermore, the use of the drill produces almost the same results as one harrowing, thus better preparing the seed head, a point of no small importance.

Black Currants.—P. R. Stokes, Warren Co., Pa.: There is not much demand in the markets for black currants, and a large plantation of them is not desirable nor advisable. The bushes are very handsome when in bloom, and the fruit is useful for preserving, and for pies. Half a dozen bushes are a good ornament in the garden. Lee's Prolific and Crandall are the leading varieties.

An Excellent Grape.—Charles Stone, Cedar Co., Mo.: The Moyer grape has borne out all the claims made for it by its introducer, and has proved itself productive and reliable. It will not fertilize itself well, and must be planted alongside of other varieties to insure a good crop. It is equal to Delaware in flavor, and ripens with Champion.

A Beautiful Lawn Tree.—R. S. Stoddard, Jo Daviess Co., Ill.: The Tulip tree is a splendid ornament for the lawn. The blossoms look very much like tulips, but are not borne until the tree has been planted several years. Being difficult to transplant, the tree must be moved when small, and protected for a few years.

Fancy-Leaved Caladiums.—P. H. Warren, Mercer Co., Pa.: Fancy caladiums are among our most beautiful foliage plants, if they have a shady place. The hot sun spoils them. They have large, beautiful leaves, spotted, splashed, and striped with scarlet, white, and other colors. The leaves are not as large, however, as those of *Caladium esculentum*, now called *Colocasia*.

Foliage Plants for the Lawn.—C. L. Sturgis, Wood Co., O.: A foliage bed is very desirable for the lawn, requires but little care, and is beautiful for a long time. It may be made of one kind of plants like cannas, or a bed of six feet, or more, in diameter may be filled with a variety. For this purpose castor beans, nicotiana, caladiums, cannas, and alocasias, make a good mixture and produce a fine effect.

Adjusting the Plow.—W. C. Cantor, Broome Co., N. Y.: Much of the ease in holding a plow depends upon its proper adjustment. Many farmers do not appear to realize this fact, and will, and do, plow sod and stubble without making any change whatever in the adjustments. A plow to work properly should, in soil quite free from stone, turn the furrow, with the plowman scarcely touching the handles. Should it be inclined to run to the right or left in cutting a furrow of the desired width the line of draft should be changed. If inclined to come to the surface the clevis at the end of the beam should be raised, or a new point attached. Do not place the clevis so high that great pressure comes upon the wheel. Modern plows allow the raising and lowering of the end of the handles, and they should be just high enough so that when standing in an upright position they may be grasped without stooping. A good point and landside have much to do with the easy running of a plow.

Grass With Grain.—C. P. Stark, Clay Co., Miss.: It is not advisable in a warm climate to sow clover and grass seed with small grain. The clover or grass crop will be of doubtful value for either hay or pasturage the first year, the heat of the sun, coming down hot upon the young plants after the grain has been harvested, and the protection of shade removed either destroys the plants altogether or injures the stand.

Value of Bermuda Grass.—Ed. Montgomery, Oktibbeha Co., Miss., writes us: "In the Gulf States are large areas of land, here and there, sodded to Bermuda grass. One acre of rich land, well sodded in this grass, can be made to support two cows, at least, during the 12 months. There is a piece of land in this town, not over three-quarters of an acre, that has been known to pasture three head of cows and several hogs, daily; and four head of horses and mules one day in the week, for seven months, continuously. When grazing on this grass, no other feed whatever was provided at any time to supplement the grass. If there is any one grass, anywhere, that will furnish more grazing, and keep the stock in as high flesh as Bermuda, I have no knowledge of it."

Tall Meadow Oat Grass.—P. R. Connely, Boone Co., Mo.: This grass is adapted to a variety of soils. It is one of the few grasses that succeeds well on sandy land. It attains a height of from four to seven feet. It furnishes excellent winter pasture of high nutritive value. After the seeds have dropped off, the stems are still green and make fair hay. Sow the seed in early spring or fall. Two bushels of seed are required per acre.

Wire Worms.—John Haley, Grant Co., Wis.: Wire worms are a little over three years in developing from the egg to the adult form of snapping beetles. The wire worms are the larvæ which breed in damp, cold soils, eating the roots of grasses and other plants. A practical method of thoroughly destroying the worms has not yet been found. Many worms may be killed by fall plowing, and they dislike frequent rotations of crops and efficient under-drainage In corn fields, so injured by wire worms as to render re-planting necessary, it is best to plant the second time between the old rows, allowing the latter to stand as long as possible to feed the worms.

Snow on Evergreens.—J. Jackson, Rockland Co., N. Y.: The heavy snows and sleet of the past winter have, no doubt, destroyed many handsome evergreen trees and shrubs, but if these losses only serve as lessons for proper pruning of such plants we would not complain. We fear, however, that those who have evergreen hedges will continue to prune them in such a manner as to leave a broad, flat head to catch all the snow that falls, instead of pruning to a point, or at least to a rather acute oval form. The same shape should be given to all single specimens of evergreen trees, wherever possible, without seriously distorting the natural form, as in the weeping, trailing and globular shaped trees. But with all such precautions there will still be many trees, like the round-headed arbor-vitàes, retinisporas and evergreen box, from which the snow should be removed whenever it falls to any considerable depth in winter. A man with a stick or heavy broom can clean the snow from a hundred small trees in an hour or two, thereby saving them from injury.

Victoria Currant.—T. Siebert, Westchester Co., N. Y.: The Victoria currant is a very old English variety, and 50 years ago it had been disseminated under various names, such as Roby Castle, Houghton Castle and May's Victoria, etc. That it has remained so long in cultivation is certainly a good recommendation. It seems to succeed best in cold climates, and this is probably one reason why it is so popular in Canada and in some of our northern border States. The bunches are very long, or from five to six inches; berries medium to large, deep red, but not quite as dark as those of the Red Dutch and Cherry. It is claimed that the pulp of the Victoria Currant contains more mucilage than any other red variety; consequently the sharpness of flavor is not so perceptible. It is a good old variety and valuable for general cultivation.

Importing Eggs.—F. Brown, Erie Co., N. Y.: Under ordinary circumstances we do not think you would succeed in importing the eggs of any breed of fowls for the purpose of raising chickens therefrom. It is no doubt true that eggs have been imported for such purposes, and with fairly good results, but in all instances that have come to our notice, the eggs were carefully packed in chaff or some similar material, in close boxes or baskets, then taken in charge by some one who would see that they were kept moderately cool, and the package invested daily during the entire voyage. We have no doubt that the poultry breeders who visit Europe occasionally bring home small quantities of eggs in this way, and for breeding purposes.

The Variable Tomato.—Market Gardener, Camden, N. J.: All who raise tomatoes know how difficult it is to procure a variety so thoroughly established that it will come true from seed. Many of the newer varieties are disseminated before their individual characteristics have been fixed by years of careful selection, and the results are that only a portion of the plants produce fruit that would be recognized as genuine. The proper course to pursue in establishing a new variety of tomato is to propagate the stock wholly by cuttings for the first two or three years, after which it will be found to come true from seed unless cross fertilized by some other variety. To do this one must have a propagating house, where a few stock plants or struck cuttings can be kept to work from late in the winter or early spring. If a single branch of a tomato plant bears exceptionally fine fruit, take off a few cuttings and perpetuate it in this way instead of from seed. This has been our practice for years, and we have had no trouble from irregular shapes or sizes in tomatoes.

Tear-Shedding Fir Trees.—D. Wright, Kings Co., N. Y.: The paragraph clipped from a city daily, to which you call our attention, is certainly interesting, not only because the writer's statements are untrue, but as a fresh instance of the many times an old myth may be revived and repeated as something new and true. In its new dress the claim is made that in the forests of Oregon, Washington and Montana, there is a species of fir tree that gives a continuous and copious flow of pure, clear water from the ends of the leaves and branches. Of course every one who is at all acquainted with the evergreen trees of this country knows that no such species exists, and that this story is but a rehash of one told centuries ago about a certain mythical "Fountain tree" found in the Canary islands, which, according to tradition, supplied each family with seven pots of pure water daily; but such trees are, in fact, never found in nature, though they frequently appear on the pages of sensational newspapers.

Importing Potatoes.—S. McKean, Cook Co., Ill.: The report in regard to the importation of potatoes may seem strange, still it is true, and we have been doing the same thing for many years. In 1888-89 we imported about one and a quarter million sacks from Great Britain and the continent. This was a rather larger quantity than usual, but a few thousand sacks more or less are scarcely noticed in the markets of our larger cities. Owing to the short crop of potatoes here last season, the importations are again considerable, although the quality of the tubers is said to be below the average in former years. We ought to be able to raise all the potatoes required for home use even, in unfavorable seasons, but for some reason we do not, and we purchase enough in Europe, or elsewhere, to make up the deficiency.

Mulching Strawberries.—Fruit Grower, Orange Co., N. Y.: When strawberries are cultivated in hills or rows, some kind of mulching is necessary to keep the fruit clean, and it also assists greatly in keeping the soil moist. The best material for this purpose is salt meadow grass, but where this cannot be obtained bog hay from fresh water bogs and low ground is far preferable to straw of any kind, for the latter is very likely to contain some grain, which will soon sprout and the new growth become a nuisance in more ways than one. If sawdust is used it will, when dried in the sun, blow about and stick into the ripe berries, rendering them unfit for use. What is called coarse, strawy manure usually contains too many weed seeds and grain for this purpose, and is even more objectionable on this account than well threshed wheat and oat straw. Old tan-bark will answer, but contains little in the way of a fertilizer when it becomes mixed with the soil. Spent hops from the breweries is, perhaps, the best of all materials as a mulch for all kinds of plants, but unfortunately they cannot always be obtained.

Variety of American Ivy.—S. Waters, Union Co., N. J.: The American Ivy, (*Ampelopsis quinquefolia*) is somewhat variable, especially in the size and form of its leaflets, and the plant with the very large broad leaves to which you refer is probably a variety occasionally found in old gardens as well as in the fields of Northern New Jersey, and perhaps in other parts of the State. It appears to be quite distinct from the species, the leaflets of the latter being of an oblong-lanceolate form, while those of the variety are much larger and fully as broad as long, and very coarsely toothed. We think that the variety is much the best, and worth propagating under a distinct name. We would suggest that it be called the *A. macrophylla*, or broad-leaved American Ivy.

SCIENCE IN FARMING.

Proper Food for Horses.—The rations for working horses should be as carefully prepared as those for dairy cattle. E. B. and L. A. Voorhees of the New Jersey station fed various foods to city work horses and report (B. 92) that the kind and quality of specific nutrients contained in feeds and not their commercial names should guide in the preparation of rations. Oats are an excellent horse feed because of the amount of the more valuable fat and protein contained in them. Dried brewers' grains proved to be a wholesome, nutritious and palatable horse feed. At $18 per ton it may be substituted for oats at $30, and a decided saving made. Timothy hay and oats at present prices are expensive feeds, and the farmer raising them may find it profitable to sell them and purchase other equally useful food materials. The selling price of fine feeds and farm products is not a correct basis for estimating their actual feeding value. Farmers who intelligently exchange farm produce for commercial feeds even at the same price per ton may secure not only an increase in feeding value but also a gain in fertility. The conditions of the markets do not recognize many of the differences in the fertilizing constituents of the many horse feeds.

Rocky Mountain Potatoes.—Potatoes grown in the cooler table lands of the Rocky Mountains are remarkable for their fine flavor, partly because of the climate and partly by reason of the greater control of moisture due to irrigation. F. L. Watrous of the Colorado station reports (B. 21) from trials made in the valley of the Arkansas River that irrigation should be used as a supplement to cultivation. The stirring of the surface soil causes it to act as a mulch retaining the needed moisture in the subsoil. The best soil should be selected for the crop and covered with straw in winter. Just before plowing, burn this and plow deep. The seed used should be from cold climates and should be planted, either very early or very late, five inches deep, in north and south rows. The surface soil should be frequently stirred when the plants are small. But little irrigation water is needed and should be given in furrows when the plants are in blossom. When the soil is once wet, it should not be allowed to dry out until the potatoes are full grown. The potatoes should be thoroughly ripened by withdrawing the irrigation water and drying out the soil.

Transplanting Tomatoes. — Experiments of transplanting tomatoes at the New York Cornell station are reported by L. H. Bailey and L. C. Corbett as showing that leggy or drawn plants set at the ordinary depth, and one-half the stem layered and covered in a shallow trench gave much larger yields than normal stocky plants started and planted at the same time. Plants which were sheared to make them stocky were later than those that were transplanted at the date of shearing. Plants grown from seed of the first ripe fruit of the kinds planted gave poorer yields and no earlier fruit than plants grown from sister fruits which ripened three and one-half months later. No gain is secured by selecting seeds from first ripe fruits and neglecting the character of the plants. Hilling tomato plants, during two years, has given no favorable results. Trimming the plants after they had made good growth in the field was not advantageous. For two years, single stem training in the field gave decidedly heavier yields to the square foot, and the crop was earlier.

Spraying Apple Orchards in Wet Seasons.—The time for destroying the apple worm is immediately after the petals fall, and the spraying should be repeated once or twice after the apples begin to hang down. Experiments by E. G. Lodeman at the New York Cornell station indicate (B. 48) that the first application of fungicides should be made soon after the buds open and just before the flowers fall. Apple trees should be so pruned that both the sunshine and the spraying reaches every part. The Bordeaux mixture reduces the injury done by the apple scab fungus. The addition of Paris green to this mixture gave better results than when London purple was used. More spraying applications are required during wet seasons than during dry ones. The trees should be sprayed once a week during wet weather. The results show that the application of the combination of the Bordeaux mixture and Paris green or London purple was valuable and practicable for the treatment of the apple scab fungus and the apple worm even when over five inches of rain fell during June.

Oats on Prairie Soils.—The experiments with oats at the Illinois station through the last five years are reported by G. E. Morrow (B. 23) as showing that it is not advisable to plow the land in the spring if the crop follows corn, the use of the disc harrow giving better results. Oats should be sown late in March or early in April. If sown broadcast about three bushels per acre should be used, covering the seed not more than one or two inches deep. Neither color, plumpness of kernel, weight per bushel nor the form of the head certainly determines value. Varieties with long, slender, comparatively light kernels have the smallest percentage of husks and probably the greatest feeding value. Early maturing varieties are to be preferred. On prairie soil an average yield per acre of over 50 bushels of oats weighing 32 pounds to the bushel, and about one and one-half tons of straw may be expected. The crop should be harvested before it is fully ripened. Binding and shocking the sheaves at once is an advantage if the grain is in condition for cutting.

Effects of Artificial Pollination.—The most important plants showing the effects of foreign pollen are the pea, kidney bean, American corn, and possibly the orange. W. N. Munson of the Maine station states (R. '92) that sweet corn shows the effects of foreign pollen more frequently than other varieties. Cucurbitaceous and solanaceous plants have not been found to exhibit the important effects of pollen. Rosaceous plants are also

TOMATOES WITH MUCH AND LITTLE POLLEN.

included in this class. The most important examples of agamic development of fruits are seen in the egg plant and the English forcing cucumber. The latter is usually deformed by the production of seeds and the consequent enlargement of the apex, though the amount of pollen does not usually determine the extent of the deformity. The amount of fruit produced by certain varieties of strawberries appears to vary in some instances with the amount of pollen supplied by the variety used as fertilizer. The form and size of tomatoes are directly dependent on the amount of pollen furnished, as shown in the illustration.

The Loco Disease.—Very little is known regarding the true nature of the loco disease of horses, cattle and sheep grazing on the Great Plains. N. S. Mayo of the Kansas station reports (B. 35) that a careful survey of the experiments performed and the observations noted leads to the opinion that the disease is the result of malnutrition or a gradual starvation caused by the animals eating the plants known as loco weeds, either *Astragalus mollissimus* or *Oxytropis Lamberti*. Though chemists have failed to find any narcotic principles in these plants, such a great quantity is eaten by the animals that the accumulative effects of a very weak poison may be the cause of the disease. The plant is probably eaten, not for its narcotic effects but because it remains more green and fresh than other plants, many of which dry up during the summer. The fits of delirium and insensibility in the horses may be due to the formation of clots or thrombi in the blood vessels of the brain, as is usual during wasting diseases. The emaciated body, the flaccid atonic digestive system, the serum of the brain and abdomen, the swollen and dropsical condition of other parts, and the low temperature, would seem to be caused by malnutrition. The diseased condition of the brain gives rise to the peculiar crazy symptoms associated with this disease. It is well known that if an animal suffers from degeneration of brain tissue, it never recovers its normal mental faculties, though it may recover from the disease which caused it. This may account for the fact that a locoed animal never makes a complete recovery.

Fungus Diseases of Sugar Beets.—Every cultivated plant seems to have parasitic enemies, and the sugar beet is no exception to the rule. C. E. Bessey of the Nebraska station reports (R. '92) that in July and August some studies were made of some obscure diseases in the sugar beets grown by the station, causing a decay of parts of the roots. Although specimens from other localities were examined, no beet scab was found. In August, the leaf spot disease broke out quite violently on the experimental plats. Spraying with a copper carbonate solution was recommended and used. This leaf spot disease will probably not prove to be a serious disease of the sugar beet. It has a very threatening appearance when it attacks a field, but many inquiries made throughout the States where sugar beets are grown fail to find any case of serious or widespread injury. In these studies, a mold, *Verticillium rufum*, hitherto unknown in America, but previously observed in central Germany, was found upon the surface of the beets.

Sorghum or Sugar Beets for Warm Climates.—Making sugar from sorghum presents difficulties which are not found in making sugar from either beets or sugar cane. G. H. Failyer and J. T. Willard of the Kansas Station report, however, that there seems to be much reason to believe that these difficulties will be ultimately overcome. They state (B. 36) that the Kansas experiments cannot be regarded as lending great encouragement to the hope of a successful establishment of the beet sugar industry in that warm climate. The sugar content was much below the average yield of the beet crop in Germany. The possibilities of growing sorghum containing an abundant percentage of sugar, rivaling indeed the tropical cane in every respect, has been amply shown in Kansas. The work in seed selection has been in progress five years, and has been attended by a constant improvement in the quality of the sorghum. Part of this improvement may be due to the acclimated seed. The richest stock of variety 208 contained nearly 21 per cent of cane sugar. Undendebule contained over 20 per cent.; Colman Cross of Amber and Orange contained over 19 per cent; Kansas Orange was nearly as sweet; Link's hybrid contained nearly 18 per cent. The trials of fertilizers on sorghum have been continued three years on the same plats. Nitrate of soda is the only one of the common fertilizers, the use of which has been uniformly attended by an increase of sugar in the juice.

Grapes in the Gulf States.—The experiments with grapes at the Mississippi Station as reported by S. M. Tracy and F. S. Earl (B. 22) shows that grapes thrive perfectly in the Gulf States. Even on wet ground they grow and bear well. The ordinary vine diseases occur but are not specially destructive. The best varieties for the coast region are Ives, Champion, Delaware, Niagara and Concord. The varieties recommended for cultivation further north are Moore's Early, Delaware, Brilliant, Niagara, Eaton, Triumph, Romell, and Herbemont. As the European varieties start too early and are subject to mildew, they give little promise of success. The much dreaded black rot is little known and is not troublesome. The bitter or ripe rot is a serious enemy. It does not yield to treatment with fungicides, but may be somewhat controlled by proper training and culture. Its growth is encouraged by wet weather which occurs in July when the grapes are picked and continues to develop on the fruit while it is being marketed. The horizontal trellis where the grapes are trained on three or more wires is the best protection to the bunches which thus hang below the foliage.

"Honesty is the best policy." Nobody contradicts it.

Your dealer can get lamp-chimneys that almost never break from heat, or those that break continually. Which does he get? Which do you get?

Macbeth's "pearl top" and "pearl glass" are tough against heat; not one in a hundred breaks in use. The glass is clear as well as tough. They are accurate, uniform.

Be willing to pay more for chimneys that last till they rot, unless some accident happens to them.

Pittsburgh. GEO. A. MACBETH CO.

KEEP Leather new with Vacuum Leather Oil; 25c, and your money back if you want it.

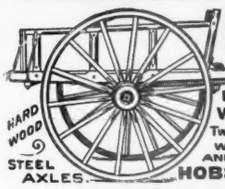
Patent lambskin-with-wool-on swob and book—How to Take Care of Leather—both free at the store.

Vacuum Oil Company, Rochester, N. Y.

SPRING CARTRIDGE LOADER
Reloads Old Shells Perfectly.
Sent postpaid on receipt of $1.00, subject to return if not satisfactory. AGENTS WANTED.
Send stamp for Circular A.
BALDWIN & CO., 126 Liberty St., New York.

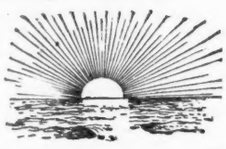
WHITMAN'S BALING PRESSES.

Always Victorious.
A FULL LINE.
Buy the BEST.
Send for Circulars. Warranted Superior to all.
See our "NEW DEPARTURE" low price FULL CIRCLE BAILING PRESS.
Largest Hay Press Factory in America.
WHITMAN AGRICULT'L CO., St. Louis, Mo.



HORSE CARTS
HARD WOOD & STEEL AXLES.
NARROW AND WIDE TIRES. 12 STYLES.
TWO AND FOUR WHEELS. $25. UPWARD.
WRITE FOR CIRCULARS. AND SAY WHAT YOU NEED.
HOBSON & CO., TATAMY, PA.

A Ruddy Glow



on cheek and brow is evidence that the body is getting proper nourishment. When this glow of health is absent assimilation is wrong, and health is letting down.

Scott's Emulsion

taken immediately arrests waste, regardless of the cause. Consumption must yield to treatment that stops waste and builds flesh anew.

Almost as palatable as milk.

Prepared by Scott & Bowne, N. Y. All druggists.

Protect Against Cold.

Hot houses are a prolific source of colds. The way to avoid the danger is to secure some efficient protection for the more sensitive parts of the body when one goes out into the cold air.

Allcock's Porous Plasters supply this need exactly. They protect the skin, which becomes weakened by excessive heat. They also strengthen it by keeping the pores open and thus assist Nature to overcome the congestion which so often attends exposure. As a result the skin is kept in a perfectly healthy condition and is enabled to perform its necessary functions in a normal way.

This, remember, is not true of all plasters. If you would be certain as to the results, you must make sure and get the genuine

Allcock's Porous Plasters

and no other.

H. W. JOHNS' ASBESTOS LIQUID PAINTS

SEND FOR SAMPLE CARD AND DESCRIPTIVE PRICE LIST.
H. W. JOHNS MANUFACTURING COMPANY,
H. W. Johns' Asbestos Roofing, Sheathing, Building Felt, Asbestos Steam Packings, Boiler Coverings, Roof Paints, Fire-Proof Paints, etc.
VULCABESTON Moulded Piston-Rod Packing Rings, Gaskets, Sheet Packing, etc.
87 MAIDEN LANE, NEW YORK,
JERSEY CITY. CHICAGO. PHILADELPHIA. BOSTON. ATLANTA. LONDON.

Alfred Peats
WALL PAPER

Send 5c. for postage on 100 beautiful samples of Wall Paper and our guide, "How to Paper and Economy in Home Decoration," will be sent FREE.

Handsome Gold Parlor Paper, 10, 12 1-2, 15c

Per roll, all with wide borders and ceilings to match. Will refer you to more than twenty thousand well satisfied customers. Paper-hangers' sample books, $1.00.

Send to the nearest address.

ALFRED PEATS, Wall Paper Merchant,
136-138 W. Madison St., CHICAGO.
30-32 W. Thirteenth St., NEW YORK.

RHEUMATISM One of the greatest discoveries of the century. Safe, speedy, sure Cure for Rheumatism, Rheumatic Gout, Sciatic Rheumatism, Skin diseases and Dropsical tendencies. All cured promptly by this remedy. It has cured hundreds, and will cure where instructions are followed. Purifies the blood and regulates the system. Large bot., 3 for $5. Reg., $1.25 3 for $3, delivered. Cat. free, with ref. Burt Chemical Co., Box 23 Cambridge, O.

ANIMAL AILMENTS.

Food for Sick Horses.—F. D. Brown, Trumbull Co., O.: Horses, as a general rule, do not thrive on slops or mashes frequently given. Colicky horses should seldom be fed mashes or silage. But a tired, feverish horse will feel grateful for a small feed of warm bran mash with a few handfuls of finely-cut roots in it. When a horse is stopped from work from any ailment, his feed should be smaller, more digestible and less stimulating. We give, as a rule, too few roots to our light-work horses. With bran or middlings, finely-cut roots, once, daily, at night, is both cheap and healthful.

Loss of Appetite in Hogs.—John Gildersleeve, Fayette Co., Iowa, states that his hogs get off their feed occasionally. They are fed the refuse from the house and dairy, and soft corn, and lately some mill stuff that the horses refused. There is no greater mistake than the popular notion that hogs are filthy animals, and that they eat any and everything, and that any kind and quality of food, good, bad, or indifferent, is good enough for hogs. Pork suffers just as much from bad food as milk does, though the test is not so easily made. More than this, a disordered digestion in the pig from bad food retards growth and makes the product poor in quantity and quality. In a word, then, feed the healthiest and the best animals the best food for the best products. None others give the best satisfaction and bring the best prices.

Diseases Caused by Bad Food.—James Hogan, Logan Co., Kan.: Kiln-dried oats or corn that have been damaged in transit to market in leaky vessels, musty hay, dusty bran, grown grains from exposure to inclement weather, are the causes of many ailments in horses, cattle, sheep and hogs. Indigestion is the most common result of too free use of such damaged foods. Soon the sympathy of the digestion system with the kidneys or the liver, excites diabetes, resulting in congestion or jaundice; irritation causing diarrhœa; defective circulation resulting in dropsy of the hind legs of horses, or of dropsy of the belly of cattle and sheep; staggers in pigs or calves or young cattle; loss of milk, or may cause abortion in all or any species of pregnant domestic animals. These are a few of the baneful effects of bad food. The ailments from these sources may be greatly ameliorated by a change, and by giving pure water.

Wolf Teeth of Horses.—T. E. Sabin, Kankakee Co., Ill.: The so-called wolf teeth are the small teeth remaining in front of, and touching the nearest upper molars, which are insignificant, though many ignorant people attach all manner of whims and superstition to them. They are easily removed, and then cease to annoy persons who attach to them marvelous significance. It is sometimes necessary to cut the gums of colts, whose teeth are sluggish in pushing through. Sometimes the milk teeth are apt to push aside the exit of the permanent ones. The former should be extracted with forceps to prevent the distortion of the permanent teeth. When the teeth of old horses are worn down so that the sharp and jagged edges cut the lips, a veterinarian can, in a few minutes, file off the edges.

Blue Milk.—Seth A. Porter, Ozark Co., Mo., asks: What makes my cow give blue milk? There is no disease of cows that causes them to give blue milk, though bloody milk may result from a blow, a kick, or inflammation of the udder, or from other diseases. The blue milk is caused by a micro-organism called *Bacillus cyanogenus*, in conjunction with the common lactic acid bacillus. The color seems the result of the products of the two, or the destructive decomposition of the milk of the two combined. But where the blue milk organism comes from, is, as yet, unknown. So that this leaves us in the dark as to the causes of the rarely-occurring epidemics of blue milk. But we must naturally surmise that its source must be some hidden filth, for it never appears in dairies where absolute cleanliness prevails.

Detection of Glanders by Mallein.—During the past two years the United States Bureau of Animal Industry has been investigating the detection and cure of glanders by the use of mallein. Mallein is an albumen extracted from culture liquids of *Bacillus malleus*, the parasite that causes glanders and farcy in horses and man. These experiments were negative in so far as the cure of glanders is concerned. Very positive results were obtained, however, in detecting the disease. The mallein is used by injecting a small quantity under the skin of one side of the neck. Careful observations are made at stated intervals of any rise of temperature there may be during one, or even two, days. If there is a decided rise it is taken as diagnostic of glanders. Thirty-nine horses were experimented upon and 21 were found diseased. Thus in each case the mallein injection confirmed the physical diagnosis. In a suspected case it gave such pronounced aid that its value, as a means of diagnosis in such cases in the hands of the veterinarian is assured.

Indigestion in Cows.—F. Modder, Spokane Co., Wash., has a Jersey cow, that belches up liquid mixed with cut hay in the morning. The feeding as described seems proper and good. The cow has indigestion. Give powdered gentian an ounce, powdered niter a dram, ginger two drams mixed with the evening feed. If the bowels are not soluble, add four ounces of Epsom salts every second night. Discontinue the oil meal and add a handful of whole flax seed every morning.

No Foot-Rot in Washington.—Jos. W. Cottell, Kitsap Co., Wis., wishes to know if foot-rot in sheep prevails extensively in Washington, west of the mountains. We have carefully searched the Special Report of the Present Condition of the Sheep Industry, for 1892, and fail to find any allusion to the disease in any part of Washington. The demand for mutton and wool is good and the prices are high. The estimate of the mutton consumed in the States of Oregon and Washington and exported to British Columbia aggregates 375,375 head, at at an average value of $3 per head, worth $1,132,125. In West Washington there were in 1892 about 26,000,000 head; the wool averaging 17 cents per pound. Foot-rot in sheep, when treated early and thoroughly, is readily cured. There is a prejudice against the sheep industry among the cattle men, because the sheep runs are avoided by cattle, on account of the short grazing. Where alfalfa and other good hay is amply provided for winter use for sheep the runs will be kept in better condition. Sheep do well on uplands that cattle do not seek.

Peculiar Swelling of Glands.—Rev. J. J. Hunter, Fred'k Co., Maryland, has a bull with a swollen gland that may impair his usefulness in the herd. The swelling has doubtless come from a hook, kick or blow. Hot fomentations will be good treatment. Woolen clothes should be dipped in hot water, wrung out and covered with two to four thicknesses of dry flannel bandage. Treat this for an hour at a time twice a day, covering the gland with a thick, dry bandage snugly applied. Roots and slops should be fed in which a quarter of a pound of Epsom salts is put in the night feed. Shut up the bull from the herd. One gland, if the animal is valuable, may be sufficiently serviceable for a small herd.

Non-Breeding Cows.—Frank Spicer, Mississippi Co., Ark., has a valuable Shorthorn cow in high condition that fails to breeds. If, as is suspected, the cow has been pampered and is too fat, which is a common cause of sterility, the method most successful will be a low diet. Roots, bran, and oat straw may be fed. If the cow gives even a small quantity of milk give bran slops and get all the milk possible. Some years ago in Kentucky such cows were put to work under the yoke with perfect success. Stallions and bulls, from being of but little service, have been made vigorous and strong by judicious work and proper feeding. The great bar to putting animals of great value to work is the mistaken apprehension that it may hurt them, while, in fact, it helps them to become serviceable in breeding. Sound health depends upon outdoor exercise to a greater extent than it is supposed.

Care of the Sheep's Foot.—The sheep's foot is said to be golden, but it cannot be made so without a good deal of care. It is one of the weak parts of a sheep. And this is especially true at this time of the year when the treading on manure is apt to soften the horn. To pare the feet is thus indispensable for safety. The sole will, no doubt, be found to have turned under and become a receptacle for soft filth. This will cause decay of the sole, and when turned out in the spring the foot will be rapidly worn down and become sore. Then some of the flock will be crawling on their knees, and by the purulent discharge from the sores, the worst kind of foot rot may be brought on. While this is called a contagious disease, and rightly so, it is not always necessary for infection that a sheep having it should run on the pasture. The germs of the disease are "in the air;" they come on the winds, we know not whence or how, but they may come, and once introduced in the flock in the way indicated, they seize upon the diseased feet and infect the flock before the owner suspects it. Sheep are provided with an interdigital gland in the foot between the claws, the office of which is to lubricate the skin and prevent its chafing. If this orifice is closed by dried filth the feet soon become raw by the chafing, and this is to be looked to during the winter. Constant vigilance is indispensable to the welfare of a flock.

Broken Knee.—Joseph Daniel, Cheney Co., Wash., has a valuable gelding that has a bunch above and another below the knee from knocking the limb against a wooden wheel. It is a blemish only. Injuries of any kind are much more successfully treated at the earliest moment possible. As the case is probably chronic, the repeated application of tincture of iodine, to the bunch and an inch or more beyond may be of service. Hard rubbing with kerosene or spirits of turpentine may be alternated with the tincture of iodine. A local blister might do good.

Warts on a Colt.—A. S. Rider, Sandusky Co., O., has a colt that has a number of small warts about the ears and nose. A veterinarian cut two off, and it made the colt so wild that he could not get near him for a week. If the warts persist after painting them with tincture of iodine two or three times a week, for two weeks, let them go for a time. Then give a teaspoonful of facetate of potash every morning in his drinking water for a week.

Milky Urine of a Horse.—Gustar Koener, Suffolk Co., N. Y., states that his horse passes thick milky water. Give the horse a dram of salts of niter in the feed every night for a week. If the bowels are costive, give once a day, till it operates, four ounces of Epsom salts in the drinking water, or wet the feed with the solution. For the purpose of shielding the mucous membrane throw a tablespoonful of whole flaxseed in each feed.

Bedding For Sick Animals.—J. Skidmore, Graham Co., Kas.: Sawdust for bedding stable animals should have all splinters, knots, nails and stones raked out of it. It is an excellent absorbent of urine and moisture. Any disinfectant can be added in sufficient quantity to overcome offensive odors. One of the most injurious gases to animals having inflamed eyes, or inflamed or irritated air-passages, is the ammonia carbonate arising from the urine. This, being a valuable element of manure, may be fixed and saved by the use of two or three pounds of gypsum and a pound of bone dust either mixed with the saw dust in bulk, or sprinkled over the saw-dusted stable.

A Delicate Heifer.—Samuel Sands, Washington Co., Ill., has a Jersey heifer of a choice strain of blood, that feeds daintily, is thin in flesh and is very small. Give a powder of equal parts of sulphate of iron and gentian root finely powdered in quantities of half a teaspoonful in her feed at night. Give from a pint to two quarts according to the age and size of the heifer. Cracked oats will be best for night feed.

Cut Fetlock.—J. R. Houson, Yankton Co., S. D., has a valuable young mare that received a cut in the fore fetlock that causes her to become lame after being driven. There is, doubtless, contraction or injury of the ligaments or tendons about the joint. Long continued fomentations by means of woolen cloths and hot water daily, followed by hand rubbing, may be of service. If not, follow up with tincture of arnica freely applied by the hand and well rubbed. If these fail, apply a blister. If all are not successful, put her to breeding.

Knock-Kneed Mare.—J. Batty, Pakau, N. W.T., has a young mare that is knock-kneed. The feet are turned out from the knees down, bringing the knees together. At one year of age she was all right. The cause was weakness of the tissues of the limb, including the bones of the leg. At that period splints and bandages should have been applied, and liberal feeding of ground oats and bran given. At present the same plan may be tried, but with what success it is not possible

to state, as the age of the mare was not given. If not successful, as the deformity was not congenital, it would not be likely to be transmitted to the offspring. Such a mare should be coupled with a stallion having large, strong, flat bones in the fore legs. Possibly, well-padded splints, reaching from the feet to the body, worn at night, may be of service. After removal in the morning, the legs should be thoroughly hand rubbed with tincture of arnica one part, to alcohol two parts, and six parts of water, for, at least, fifteen minutes. Gentle exercise will be helpful.

Contagious Dysentery.—L. Hoover, Morgan Co., Ind.: This is a specific inflammation of the mucous membranes and glandular structures of the intestines, occurring in calves, colts and lambs within four days after birth. In the muco-purulent, often blood-stained, excreta, are numerous bacteria, which are responsible for these diseased manifestations. The mortality ranges from ten to eighty per cent. The proper treatment is isolation, separation of the sick from the well, or unaffected, animals, then thoroughly cleansing and disinfecting the stalls, stables, or buildings with hot water. After removing every element of filth, whitewash, with the addition of carbolic acid, chlorinated lime, or solution of borax, to the whitewash. To the young animals two to four ounces of castor oil are given, in well-boiled gruel or mucilage, to which ten drops of laudanum is added. This may be given in boiled or hot milk, given two three, or more times daily, according to the emergency.

Heavy Sow Smothering Pigs.—L. M. Chambers, Pembino Co., N. D., is discouraged in raising pigs, from the sows having lain upon them. Ten, out of a litter of eleven, were thus killed. A box stall or pen eight or ten feet square is best. The bedding should be as thin as possible. In warm weather no bedding is still safer. Where a deep bedding is used, pigs are always sacrificed. A sow just before her farrowing time should be fed slops, not too rich, as a feverish condition produces restlessness. Quiet should be observed at the period of parturition. Nervous young sows are apt to lie upon their pigs, even after they are several days old. Roots and green food should be fed before and after pigging. Every pig pen should have some pieces of charcoal to correct acidity or indigestion.

Swollen Leg in Colt.—Miles C. Welson, Dauphin Co., Kan., has a two-year old colt that has a swelled fore leg which pits on pressure. Apply smoothly a flannel bandage from the hoof to the knee, then two or three times daily apply very warm water. Give a teaspoonful of salts of niter dissolved in the drinking water every night. If not relieved in a week, dress the leg with tincture of Spanish fly, covered with paper and the bandage, daily, until small blisters are seen. Then dress with lard. Tie up the colt's head so that he can not tear off the dressings.

BUY "DIRECT FROM FACTORY," BEST
MIXED PAINTS
At WHOLESALE PRICES, Delivered FREE, For Houses, Barns, Roofs, all colors, & SAVE Middlemen's profits. In use 51 years. Endorsed by Grange & Farmers' Alliance. Low prices will surprise you. Write for samples. O. W. INGERSOLL, 250 Plymouth St., Brooklyn, N. Y.

Price 25c. "Worth a Guinea a Box." 25c.
BEECHAM'S PILLS
Dislodge Bile,
Stir up the Liver,
Cure Sick-Headache,
Female Ailments,
Remove Disease and
Promote Good Health.
Covered with a Tasteless & Soluble Coating.
Famous the world over.
Ask for Beecham's and take no others.
Of all druggists. Price 25 cents a box.
New York Depot, 365 Canal St.

THREE THINGS.
3 Three things which afflict mankind the most with Aches and Pains, are
RHEUMATISM, NEURALGIA, LUMBAGO.
3 Three supreme afflictions are Promptly and Permanently cured by
ST. JACOBS OIL,
which does more than all other external remedies for the relief of human suffering.

Horse Owners! Try GOMBAULT'S Caustic Balsam

A Safe Speedy and Positive Cure
The Safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses and Cattle. SUPERSEDES ALL CAUTERY OR FIRING. Impossible to produce scar or blemish.
Every bottle sold is warranted to give satisfaction Price $1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.
THE LAWRENCE-WILLIAMS CO., Cleveland, O.

WHICH ONE SHALL WE SEND YOU
EACH CATALOGUE IS COMPLETE IN ITSELF.

Accordions, Auto Harps, Auto Harp Music, Banjos, Banjo Music, Violins, Violin Music, Violin Bows, Violin Cases, Guitars, Guitar Music, Clarinets, Clarinet Music, Cornets, Cornet Music, Flutes, Flute Music, Violin Repairing, Harmonicas,
C. C. STORY, 26 and 28 Central St., Boston, Mass.

GRINDING MILLS

ESTABLISHED 1861.
FLOUR MILLS built by contract. Roller System.
French Buhr Stone Portable Mills for Farmers, 28 sizes and styles. COMPLETE MILL and SHELLER.
A boy can grind and keep in order. Adapted to any kind of power. Complete Flouring and Corn Mills; also for hominy and pearl meal, all sizes. Second hand mills of other makes on hand. Send for Book and how to grind. Address
NORDYKE & MARMON CO., 15 York St., Indianapolis, Ind.

BE HAPPY WHILE YOU LIVE, FOR
YOU WILL BE A LONG TIME DEAD.
To be Happy buy a
DANDY STEEL MILL

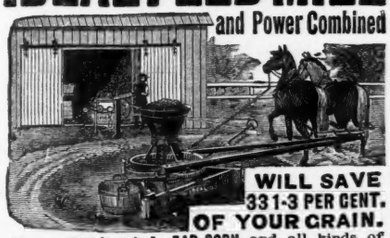
With Graphite Boxes. Never needs Oil. The Dandy Steel Tower is a 4 Cornered Tower, and the strongest and best in the market. Will be sent on 30 Days Test Trial, and if not entirely satisfactory can be returned to us, and WE WILL PAY FREIGHT BOTH WAYS. We also manufacture the old Reliable Challenge, O. K. Peerless and Daisy Wind Mills, Pumps, Cylinders, Tanks, Feed Mills, Corn Shellers, Horse Powers, &c.
Challenge Wind Mill & Feed Mill Co., Batavia, Kane Co., Ill.

THIS SOLID GOLD GENUINE DIAMOND RING
FREE to any girl who will do a few hours work showing our new goods to their friends. Send No Money.
L. M. ASSOCIATION, 269 Dearborn St. Chicago, Ill.

Don't YOU Need a "BABY" Cream Separator

If you have five or more cows, a "BABY" cannot but prove a most profitable and pleasing investment. Its use means more and better butter, warm skim-milk for feeding purposes, saving of ice, time, labor, and plant, and better satisfaction with dairying generally.
Send for new "BABY" catalogue, giving actual experiences of well-known users and endorsement of highest dairy authorities in every section, styles, capacities, prices, and complete information.
THE DE LAVAL SEPARATOR CO.,
GENERAL OFFICES:
74 Cortlandt St., New York.

STUDY LAW AT HOME.
TAKE A COURSE IN THE SPRAGUE CORRESPONDENCE SCHOOL OF LAW. (Incorporated.)
Send ten cents (stamps) for particulars to
J. COTNER, JR., SEC'Y, DETROIT, MICH.
528 WHITNEY BLOCK.

IDEAL FEED MILL and Power Combined

WILL SAVE 33 1-3 PER CENT. OF YOUR GRAIN.
Remember it grinds EAR CORN and all kinds of grain FASTER AND BETTER than any other. Our line comprises Everything in the shape of GRINDING MILLS. Address for catalogue,
STOVER MFG. CO., 510 River Street, FREEPORT, ILL.

THE PERKINS WIND MILL.
THREE STRONG POINTS.
NO OIL.
NO CLIMBING TOWERS.
MILL PERFECTLY SELF REGULATING IN ANY STORM.

The Perkins Wind Mill with Graphite bearings on all wearing parts, is the mill that possesses all these points, and is not affected by heat, cold or wet weather.
We have had twenty-three years experience in the manufacture of Wind Mills, Pumps, and Tanks, and are to-day one of the largest manufacturers of Wind Mills in the United States. The PERKINS is the first in the hearts of the Farmers. Remember there are none genuine except those made at Mishawaka, Ind. Farmers ask your dealers for a PERKINS. If he will not get it for you, write us for catalogue G and prices.
Good Agents Wanted.
PERKINS WIND MILL CO.
MISHAWAKA, IND.

THE CROPS OF THE WORLD.

Sources of Supply and Demand Through all the Continents.

The Department of Agriculture has just completed and published a very elaborate report upon the principal crops grown throughout the world. There are 92 countries represented in the work and the figures cover a period of 10 consecutive years, wherever official annual statistics have been available, otherwise based upon the best known available statistics. It affords a knowledge of the actual supply and consumption of each individual country. It reveals peculiarities of agricultural possibility and adaptations of climate and soil to the helpfull growth of different plants. Such a work has involved translations from different languages, the reduction of weights and measures, the collection of annual statements during a decade, and the acquirement of information as to population. The difficulty and magnitude of the work can scarcely be exaggerated, and the greatest care has been taken to secure accuracy. No such previous compilation, in so complete or extended a form, has ever before been published, and it has involved an immense amount of labor upon the part of the statistician, Mr. J. R. Dodge, and his clerical force. It is a fitting document to emanate from the department of agriculture at this period, and will be a lasting memorial to the valuable services performed by the Hon. J. M. Rusk, secretary of the Department of Agriculture, during his term of incumbency, for the benefit of American farmers.

Food Supply of the World.—The very elaborate report referred to covers the population of every part of the habitable globe, even including islands in the Atlantic and Pacific and the small foreign dependencies of the European countries. It also covers the product of the different crops at each and all of the centers of population, the figures being tabulated in detail. In order to arrive at some idea of the aggregate supplies of staple crops in each section of the globe, the AMERICAN AGRICULTURIST has condensed the whole of the department's immense mass of statistics into one table, giving separately the population of Europe, Asia, Africa, America and Australasia, together with the average per annual production over a period of 10 years, 1880-'90, of wheat, corn, oats, rye, barley, potatoes, tobacco, cotton and wool, and also separately the average supply per head of each product in each continent. The result of this condensed tabulation is as follows, the last three ciphers (000) omited:

THE PRINCIPAL CROPS OF THE WORLD.

Population.	Europe. 349,156,000		Asia. 677,249,000		Africa. 9,520,000		America. 88,860,000		Australasia. 3,997,000	
Average 10 Years.	*Bushels.*	*P. Head*	*Bushels.*	*P. Head*	*Bushels.*	*P. Head*	*Bushels.*	*P. Head*	*Bushels.*	*P. Head*
Wheat	1,264,600	3.6	341,285	.5	34,830	3.4	479,671	5.4	36,295	9.0
Corn	366,016	1.0	824	....	16,525	1.7	1,706,964	19.2	6,828	1.7
Oats	1,626,164	4.7	.....	....	.....	....	594,961	6.7	17,045	4.2
Rye	1,267,980	3.6	22,411	....	.....	....	27,340	.3	73	....
Barley	642,836	1.9	32,027	....	44,578	4.5	79,679	.9	2,675	.7
Potatoes	2,663,505	7.6	1,762	....	165	....	169,864c	1.9	15,879	3.9
Tobacco, *a*	442,411	1.3	94,391	.1	264	....	499,085	5.6	3,713	.9
Cotton, *b*	12	....	3,350	2.0*a*	1,027	40.0*a*	11,155	50.0*a*	2	....
Wool, *a*	762,589	2.2	193.525	.3	131.482	13.0	746,375	8.4	550,000	137.0

a Pounds. *b* Bales. *c* United States and Guadeloupe only.

This table shows that Australasia produces the largest proportion of wheat, nine bushels per head of its population, which is less than 4,000,000 people, while America, including Canada and South America as well as the United States, comes next with an average production of 5.4 bushels of wheat per head of its population, Europe producing 3.6 bushels per head, Africa 3.4 and Asia only ½ bushel. In both corn and oats America leads, its production of corn being 19.2 bushels per head and of oats 6.7 bushels. While there is but little corn grown in other continents Europe grows more oats than does America, although its average per head of population is two bushels less. Europe furnishes almost all the rye and barley, although in per capita production Africa leads with 4½ bushels of barley, mostly grown in Algeria and Egypt and some at the Cape of Good Hope. The average yield of potatoes in Europe, 7.6 bushels, appears somewhat heavy as compared with less than two bushels per head of population in America, Australasia having almost four bushels per head. In tobacco, of course, America leads with an average production of 5.6 pounds per head of population, Europe coming next with 1.3 pounds; and in cotton also America leads with an average of 50 pounds per head, Africa ranking next with 40 pounds. In wool, as might be expected, Australasia is prominent with an average yield of 137 pounds of raw wool per head of population, although the largest aggregate quantity annually produced is in Europe, with America next and Australasia ranking only third.

The World's Wheat Supply shows that the annual average crops aggregate 2,280,857,000 bushels, not including some districts known to produce wheat but from which statistics were unavailable, and making no account of the wheat grown in the northern provinces of China. A considerable portion of the wheat trade of the world is carried on in the form of flour, and, as in most official records of foreign trade, the different kinds of flour are not separately stated; it is, therefore, impossible to calculate exactly the wheat supply per head of population. The wheat market of the world is judged to be very circumscribed, being practically all in Europe, and even there, limited to the necessities of a few countries such as Great Britain and Belgium. Exclude these two countries and Europe is practically self-supporting, the excess in eastern countries being sufficient to meet the deficiencies in the western nations, while America, India and Australasia are relied upon to meet the remaining European deficiency. The classification of the principal countries into importing and exporting, excluding those in which supply and requirements are closely balanced, shows that there are nearly 8,000,000 bushels of wheat to find a market in such countries as are not reported. The figures are as follows:

WHEAT-TRADING COUNTRIES.

Countries.	*Net Imports Bushels.*	*Countries.*	*Net Exp'rts Bushels.*
Belgium	19,170,059	Aus.-Hung'ry	5,846,800
France	37,426,407	Bulgaria	5,690,996
Germany	18,767,319	Roumania	19,200,979
Greece	8,975.790	Russia	83,170,011
Italy	19,931,234	Servia	2,236,912
Nor. & Swed'n.	1,909,362	India	30,946,842
Netherlands	8,591,639	United States.	83,343,864
Portugal	3.663,852	Argentine	3,747,733
Spain	6,111,449	Canada	2,416,821
Switzerland	10.867,766	Chili	3,924,346
United King'm	105.527,648	Australasia	8,178,886
Total	240,942,525	Total	248,704,190

The Corn Crop.—The great bulk of this crop is grown in the United States, but it is also an important factor in rural economy in European countries along the lower Danube, in Mexico and the Argentine Rupublic, and a scattering crop in most countries where climatic conditions are favorable to its growth. Its value as human food is appreciated only in America, its principal use in the old world being as an animal food. Europe imports annually about 64,000,000 bushels of corn, the United States averaging 57,000,000 bushels in exports, of which Canada takes about 2,000,000 bushels. While the United States ships to Europe much more corn than all other countries combined, yet our shipments are less than four per cent. of our annual production. In Europe only four countries export corn, Bulgaria, Russia, Roumania and Servia, and of these only Russia and Roumania are important factors. The aggregate corn crop of the world amounts to 22,300,000,000 bushels, of which the United States averages 80 per cent. in average years and a larger proportion in years of heavy production, as, for instance, in 1891, when the crop of this country almost equaled in volume the entire average corn crop of the world.

The Rye Crop is one of the most important in European agriculture and is a prominent feature in European trade, while in the rest of the world it is of minor importance. In a large part of continental Europe rye is the bread of the people, its production and consumption being greater than that of wheat. Russia is the largest producer of rye, its crop averaging 700,000,000 bushels, a cereal crop second only to that of corn in the United States. The German crop averages 298,000,000 bushels, and that of Austria Hungary 122,000,000 bushels. Europe practically supplies its own requirements, the imports and exports of rye being almost equal. Outside of Europe, the United States and Japan are the only countries in which the crop is of interest. Here the average production is about 25,000,000 bushels, of which 2,000,000 bushels are exported, the remainder, about one-third of a bushel per head of population, being used for our own requirements. Japan produces 22,000,000 bushels, about one-half bushel per head of its population. Australasia grows 47,824,000 bushels and Canada about 2,000,000 bushels, making the world's annual rye crop, as shown by statistics, equal to 1,317.804,000 bushels, although some rye is undoubtedly grown in China and other countries. Europe grows 96 per cent of the total crop, Russia alone producing 54 per cent. of the whole, the crop being concentrated entirely in Eastern Europe.

The Barley Crop is most prominent in Europe and Canada. It is an important crop in Japan and a minor crop in the United States and Australasia. Russia is the country of largest production, followed by Germany, Austria-Hungary and the United Kingdom, though only Russia and Austria-Hungary produce enough for their own requirements. The aggregate estimated production of barley in Europe averages 640,000,000 bushels, that of Japan, the United States and Australasia being 90,000,000 bushels, of Canada 22,000,000 bushels and of Africa 45,000,000 bushels, an aggregate world's production of rather more than 800,000,000 bushels. Barley is the only cereal that is not produced in the United States in sufficient quantity for its domestic requirements.

The Crop of Oats is practically grown in Europe and North America, although Australasia furnishes considerable for her own consumption, most of which is grown in New Zealand; where climatic conditions are very favorable, the yield per acre is large, and the weight of the grain is heavy. Tasmania also produces sufficient oats for its own needs, but the deficiency in other col onies is met by imports from New Zealand. In annual production, the United States leads the world, Russia, Germany and France following next in order. The trade in oats is mostly confined to European countries, where the average annual imports amount to 97,000,000 bushels, of which the United Kingdom takes 49,000,000 bushels; but, as the exports from different European countries amount to 89,000,000 bushels, of which Russia supplies 58,000,000, there are really only 8,000,000 bushels annually supplied by other continents. The world's aggregate crop of oats amounts to 2,328,171,000 bushels annually, as a general rule the supply and demand being closely regulated.

The Potato Crop of the world amounts to the enormous quantity of 2,850,000,000 bushels, by far the largest proportion of which is grown in Europe. Germany is the greatest potato producing and consuming country in the world, with an average production of nearly 900,000,000 bushels per annum, and, in years of large production, exceeding 1,000,000,000 bushels. Russia comes next with a crop of 464,000,000 bushels, closely followed by Austria-Hungary and France. The crop of the United States is small in comparison with that of Europe, averaging only about 170,000,000 bushels, which is considerably less than that of the United Kingdom. This crop does not enter largely into the foreign trade of any country, the supply grown being mainly for home use. Germany, shipping less than 5,000,000 bushels annually, is the heaviest exporter, and the United Kingdom, importing about the same quantity, is the largest importing country. The aggregate European crops are just about enough for domestic requirements, the exports of potatoes from all European countries being only 700,000 bushels more than the total imports. Under intensive farming the production per acre of potatoes is very large. This is exemplified by the crops from the Channel Islands, where an area of only 8,819 acres furnishes 2,337,000 bushels of potatoes for shipment to the United Kingdom. This was at the rate of 265 bushels per acre in addition to home consumption, and the export trade amounted to $334 per acre cultivated.

The value of the potato crop is appreciated in densely-peopled countries, the supply per head being largest where the population per square mile is greatest. The importance of the potato as a food crop may be judged by the fact that it aggregates in Europe more bushels than the combined wheat and rye crops, and that the total European potato crop exceeds in volume the aggregate wheat crop of the world.

The Tobacco Crop of the world is mostly cultivated in America and Europe, in Europe being confined mainly to the Southern and Eastern countries. Austria-Hungary has an annual production of 134,000,000 pounds, Germany growing 90,000,000, and France 44,000,000 pounds. There is no country in Europe that furnishes any considerable supply of tobacco beyond its own requirements, and Europe's annual net importations are almost 350,000,000 pounds. This large market is supplied by shipments from many sources, the United States furnishing an average of 230,000,000 pounds annually, the bulk of the remainder being drawn from the East and West Indies, the former alone furnishing nearly 50,000,000 pounds yearly. It has been found impossible to secure an accurate estimate of the world's product of tobacco, as the crop is grown in so many countries from which no data of foreign trade is available. In Europe, official and unofficial figures place the yield of tobacco at 420,500,000 pounds annually, while the crop of the United States is given at 500,000,000 pounds. There are no facts available as to the supply from Cuba, China, Brazil or Japan, so that it is impossible to frame a definite estimate of the world's crop.

The Product of Butter in Europe is in excess of consumption, the aggregate exports being more than 75,000,000 pounds per annum. In only five European countries is the supply of butter insufficient for home consumption, and the net deficiency in those five countries amounts to a little more than 200,000,000 pounds per annum. In the United Kingdom alone this deficiency is 184,000,000 pounds. Northern Europe furnishes most of the commercial supply together with a large quantity from France, a moderate supply from Austria Hungary and Germany, and a small quantity from Italy. The exports from the Netherlands average 115,000,000 pounds annually, and from France 60,000,000 pounds. The import and export statistics from the different countries of the world show that the total net exports of all countries exceed the imports by 92,000,000 pounds. From this it is evident that something is exported as butter which is not butter, or which is not recorded in import countries as butter. The assumption is that this something is oleomargarine or imitation butter, and the country selling the compound, tries to conceal its identity by recording it as butter, whereas the country buying the stuff has no inducement for concealment, and enters it under its true name and in its proper character.

The Cheese Trade of the world is furnished by statistics only from a few countries, although it forms an important item in the food supply of many, especially in Europe, where it is largely used as a substitute for meats. Europe, however, does not produce sufficient cheese for its own requirements, the aggregate imports in all European countries amounting to 130,000,000 pounds annually. Other countries of the world also show an excess of imports, excepting the United States and Canada, the net exports of the United States being 100,000,000 pounds yearly, and of Canada more than 70,000,000 pounds. The greater portion of the surplus production of other countries is absorbed by the United Kingdom, which alone imports more than 200,000,000 pounds of cheese. The Netherlands and Switzerland are exporting countries, and the Australasian colonies, especially New Zealand, are now beginning to loom up as important factors with a considerable surplus to meet the world's supply.

The Cotton Districts of the world include the United States, Northern Mexico, Egypt, Northern Africa and Asia, except the extreme southern portion of the India and Malay peninsulas. Cotton is grown in so many countries, and under such different conditions, that it is impossible to determine the annual product. Practically the total supply consumed in the civilized world is drawn from the United States, India, Egypt and Brazil. An effort has been made to grow cotton in Russia during the past few years and Russia is now able to furnish one-third of the total amount needed for her own consumption. This has affected exports of cotton from the United States to Russia, which averaged 134,000,000 pounds annually 10 years ago, and have now fallen to 67,000,000 pounds, a decrease of 50 per cent. Europe and the United States furnish the bulk of the consuming markets, though Canada and Japan each absorb nearly 30,000,000 pounds of cotton annually. Europe consumes nearly 2,000,000,000 pounds, of which the United Kingdom takes one-half, or 1,500,000,000 pounds annually, the United States using 1,134,000 pounds. It is interesting to note that the supremacy of Great Britain as a cotton manufacturer is being gradually wrested from her. Less than 50 years ago she required 55 per cent. of the world's supply of raw cotton, the European continent 30 per cent. and the United States only 15 per cent., whereas now the United Kingdom takes but 27 per cent., the rest of Europe 38 per cent. and the United States 25 per cent. The United States possesses natural advantages, both as a cotton-manufacturing and cotton-producing country, and, while continuing to supply the raw product to the old world, our planters are beginning to find that the demand for domestic consumption is the more profitable. The production of cotton in the four

(*Continued on Page* 243.)

Saved His Life

Scrofula—Impure Blood Vaccination —Beyond Hope

But Hood's Sarsaparilla Effected a Perfect Cure.

Joseph Harper
Trenton, N. J.

"We are as sure that Hood's Sarsaparilla saved our son Joseph's life as that the sun shines. Five years ago on board ship our three boys were vaccinated. Joseph had a very sore arm, so bad at one time that we were afraid it would have to be taken off. At length it seemed to get well, but about two months after, he began to complain of soreness and pain in the vaccinated arm. He had occasionally shown some signs of scrofula, but nothing serious. His arm, however, grew worse and worse and became swollen and covered with sores. The inflammation and sores also spread **all over his body**, and he was a mass

Pitiable to Behold,

A misery to himself and almost breaking our hearts with anguish over his dreadful condition. Many a time did I **wish he was dead** and out of his misery.

"The eruption was especially severe back of his ears and over his head and the lower part of his face. We had to cut off all his hair as it was impossible to comb through the mass of hard crust and matter. Physicians did him no good, and specialists at the Eye and Ear Hospital said

Nothing Could be Done.

They said it was a blood disease caused by impure vaccination. One night I happened to be reading in a paper about Hood's Sarsaparilla, and decided to try it.

"While taking the first bottle, Joseph did not grow any worse; on the second, we noticed that he was improving, and, slowly but surely, the medicine drove away the disease and won a complete victory. The scales and scabs began to fall off; the sores gradually healed up, and new,

Hood's Sarsaparilla Cures

smooth and healthy skin formed in place of the disease and corruption. Of course it took time, but improvement was steady until at the end of the year the disease had entirely disappeared, and Joseph stood **a strong and healthy boy.** He is at school and progressing rapidly in his studies.

"We and all the neighbors regard his cure as **a perfect miracle.**" JAMES HARPER, heater in Roebling & Son's Rolling Mill, residence, No. 814 Division Street, Trenton, N. J.

HOOD'S PILLS cure Constipation by restoring the peristaltic action of the alimentary canal.

For A Horse.

For accident, too hard work, and skin diseases, Phénol Sodique does wonders. For all animals and human fle. .

HANCE BROTHERS & WHITE, Philadelphia.
At druggists. Take no substitute.

THE GREAT AMERICAN TEA COMPANY

GOOD NEWS To Ladies, Boys and Girls.

Gold and Silver **Watches FREE.** Beautiful Imported Decorated China Tea and Dinner Sets, Toilet Sets, Lamps, Castors, Silver Butter, Fruit and Cake Dishes, Silver Tea Sets, Knives, Forks, Cr._ons, Webster's International Dictionaries, etc., **Given Free with $15, $15, $20, $25, $30, $40 orders.** For full particulars, address
THE GREAT AMERICAN TEA CO.,
P. O. Box 289. 31 and 33 Vesey St., New York.

BOILING WATER OR MILK.

EPPS'S

GRATEFUL—COMFORTING.

COCOA

LABELLED 1-2 LB. TINS ONLY.

All the LATEST IMPROVEMENTS in

DAIRY APPLIANCES.

Everything for the
DAIRY FARM
—AND—
BUTTER FACTORY.

THE DAIRYMEN'S SUPPLY CO.
1937 Market St.,
PHILADELPHIA.

M'f'rs of the **Automatic Capillary Milk Cooler, and Other Specialties.** Price List FREE.
Agents for **VICTORIA CREAM SEPARATOR**

I. X. L. THEM ALL.
QUALITY TELLS.

THE BEST STEEL MILL.
STRONGEST STEEL TOWER
No long story here, but send for Catalogue of **Wood and Steel Mills, Pumps & Tanks.**
For Goods or Agencies address
THE PHELPS & BIGELOW WIND MILL CO.,
KALAMAZOO, - - - MICHIGAN.
Goods shipped from DALLAS, KANSAS CITY, MINNEAPOLIS or KALAMAZOO.

ROOT, BARK AND BLOSSOM

The Best Stomach, Liver, Kidney and Blood Remedy. Pains in Back and Limbs, Tired, Dragged Out, Nervous Feeling, Debility and Low Vitality **Quickly Cured** as well as Dyspepsia, Constipation, Sleeplessness, Dizziness, Rheumatism or Catarrh. Sample Free for stamps.
AGENTS PAID WEEKLY SALARY.
$1 box two months' supply | Sent by mail or at most Druggists.
50c. " one month's supply | Try It and Be Well.
ROOT, BARK & BLOSSOM, Newark, N. J.

DEPARTMENT OF AGRICULTURE.

The New Secretary.

Replying to the telegraphed congratulations of his predecessor, Mr. Rusk, the Nebraska gentleman upon whom President Cleveland conferred the cabinet portfolio of Secretary of Agriculture, wired back that he should assume the new duties with misgivings, as he recognized that he "succeeded a success." This expression of nice sentiment is characteristic of Secretary Morton's knack of saying and doing things which live in thought and epigram. His reply to Mr. Rusk gracefully sensed the real situation.

But the new secretary is systematic and untiring in his methods of work. He can apply himself intensely for an unlimited time without fatigue, and then lay off and rapidly recuperate. He has not required the attention of a physician for twenty-four years, and wears his sixty odd years with the vigor of forty. That he has the courage of his convictions is shown by his outspoken interviews since his appointment, against the tendency to what he regards as paternalism—thus opposing the anti-option bill, free coinage of silver, and sundry Farmers' Alliance demands—which has stirred up a great hue and cry against him in certain quarters. Mr, Morton is an individualist, believing that those succeed best who help themselves, and that his Department should be mainly directed toward teaching farmers how they may best help themselves, rather than beg the national treasury for two per cent. loans of new issues of paper money. While thus frankly opposed to what he regards as their follies, Secretary Morton has a lively appreciation of the farmers' condition, and is imbued with a desire to work enthusiastically and feelingly, with no humbug or indirection, in the lines commended by his judgment. Mr. Morton is a man of about five feet nine or ten inches in height, rather squarely built, well poised, with broad and fair features, sandy-gray hair, and moustache of the same color. The brows are prominent, forehead retreating, the lower face with an expression of firmness, but the whole moderated by kindliness, sympathy and refinement, which, with the frank gray eyes, that twinkle with humor on occasion, form that personality, so hard to define, which makes a man a leader among men, and draws to him friends as a magnet draws steel. He is dignified in bearing, but considerate and cordial, and without a touch of snobbishness. He combines the polish of the thorough gentleman with that open Western *bonhomie* which often characterizes those who were educated in the East, but have lived a long time on the broad prairies of the West.

J. STERLING MORTON.

For J. Sterling Morton was born at Adams, Jefferson county, New York, on the 22d of April, 1832, and comes of Scotch and early New England Puritan stock. He removed at an early age, with his parents, to Michigan, where he was educated at Albion, and at the State University at Ann Arbor, being finally graduated at Union College, New York, in 1854. He married Miss Caroline Joy French, October 30, 1854, and, though he had studied for the law, he left for Nebraska with his wife on the very day of their marriage, locating within a few weeks at Nebraska City, under the preëmption law, long before a government survey, upon a quarter-section of land, which has been his home from that day to this. One year after reaching Nebraska, he was chosen a member of the Territorial Legislature. In 1858 he became Secretary of the Territory, and a few months later acting Territorial governor, whence comes his title of "Gov." Morton. In 1860 he was elected to Congress, but was unseated through contest and the bitter feeling that prevailed at that time against those of Democratic faith. He took no active part in politics during the war, but was nominated in 1866 for governor, and since then has been four times nominated for governor in a State which had all along been hopelessly Bepublican. He has always been a prominent member of the Nebraska State Board of Agriculture, and of its horticultural societies.

Though Mr. Morton has been thus prominent politically, and repeatedly honored by his State as the ablest and most cultured man in his party, he has been largely devoted to the agricultural interests of the State, and from the very beginning has been engaged in actual farming operations, while achieving great success as a lawyer and a competence as a corporation attorney. He has always been regarded as a man of decided independence and force of character, and he has helped to make what was once an unbroken wilderness one of the most prosperous of settlements. He has been in more active sympathy than perhaps any other one man with everything that has tended to make Nebraska an empire in itself. Through his whole career in the West, he has never allowed himself to be swerved from the line of his convictions by the popular money fallacies that have been held by many of his party, and is to-day looked upon by his friends as a master of tariff and currency problems. A farmer of practical experience, he yet fully appreciates and has always encouraged scientific methods as applied to agriculture. It has been a labor of love with him to build up his farm, and he has come to be known as the sage of "Arbor Lodge," this being the name chosen for his home, which in itself is an excellent example of what time, intelligence and persistent effort may do in a rich prairie State.

Mr. Morton is perhaps more widely known by his enthusiastic interest in forestry (he is president of the American Forestry Association) and by the attention he has given to tree culture than by any other of his acts; for he has made it a point to plant every variety of fruit and forest tree that would grow in the climate of Nebraska, and his name is linked with what is one of the most beautiful customs of our time, namely, Arbor Day, now observed as a holiday in so many States of the Union, and observed in his own State on the day of his birth, April 22d. He originated this day by a resolution introduced January 4, 1872, in the Nebraska State Board of Agriculture, more than a million trees being planted the first year on the day designated by the resolution. In 1888 the Nebraska State *Press* issued an Arbor-Day edition, which contained contributions from distinguished men of letters from all over the country, including James Russell Lowell, John Boyle O'Reilly, Edward Everett Hale, George William Curtis, and Edmund Clarence Stedman. Secretary Morton is a man of keen domesticity, although a widower for several years. He has had a happy home and has brought up four stalwart sons, all so successful in business that he has said: "I could not if I would, and I would not if I could, get them to take place in public service." When his wife died, he had carved on her tombstone, "Caroline Ann, wife of J. Sterling Morton, and mother of Joy, Paul, Mark and Carl Morton." Then he took the boys to the grave and showed them their names, saying that if ever one of them disgraced the memory of his mother, he would himself chisel out that son's name. Needless to say, there has been no occasion to do so. When Mr. Cleveland's cabinet officers were sworn in, Mr. Morton produced a Bible, which he had brought with him for the occasion, remarking that he wanted to give it to one of his grandchildren as a memento.

Statements on Which Farmers Can Rely.—I have always found something of value and interest in each number of the AMERICAN AGRICULTURIST, and am glad to note its steady improvement. Every farmer can rely on its statements.
HORACE CLINGMAN, Fairfield Co., Wash.

In the Interest of the Farmer.—The AMERICAN AGRICULTURIST is without exception the best farm journal in existence. What pleases me most is that it works always in the interest of the farmer. D. E. G. PASAUR, Gaston Co., N. Car.

CROPS OF THE WORLD.

(*Continued from Page 241.*)

principal producing countries is given, for the years mentioned, by the department of agriculture, in bales of 400 pounds, as follows:

THE WORLD'S COTTON SUPPLY.

	1890	1889	1888
Brazil	364,707	329,166	453,348
Egypt	946,856	740,047	633,098
India	3,005,253	3,314,593	2,907,046
United States	10,790,110	9,057,069	8,593,521
Total	15,106,926	13,440,875	12,587,013

The Wool Supply of Europe is mostly obtained from foreign countries, especially in the United Kingdom, France, Germany and Belgium, Russia and Spain alone having a surplus in Europe. The total net imports of wool in Europe amount to 832,000,000 pounds, which, with the deficiency of 90,000,000 pounds in the United States, makes the wool market of the world. To supply this demand of nearly 1,000,000,000 pounds the principal sources are the Australasian colonies, Argentine Republic, British Possessions in Asia and Africa, China and Uruguay. Annual shipments from the Argentine amount to 266,000,000 pounds, and from New South Wales 200,000,000. The United States leads in the proportion of domestic wool used with 69 per cent., followed by the United Kingdom with 35 per cent., France with 29, and Germany with 17 per cent. This shows the superior quality of the wool used in this country. Our domestic wools are from high grade Merino and English breeds, and the infusion of imported wools is small. The commercial supply of wool is produced in hot climates, and from flocks not up to our domestic standard. The bulk of the wool is short, harsh, and of weak and uneven staple, not up to the average of American grades, and which must lower the general standard of excellence of the total supply. Official and commercial estimates give the total product of the world's supply at 2,500,000,000 pounds.

The Flour Supply of the world is mostly drawn from the United States, the exports of wheat flour from this country exceeding the net exports of flour of all kinds from all other surplus countries. Next in order in prominence are Austria-Hungary and Germany, where the figures of export include flour of all kinds. The United States is the great market for flour, importing annually 1,660,000,000 pounds of wheat flour, equal to 38,000,000 bushels of grain, while the net exports of flour from the United States equal 42,000,000 bushels of grain. In Australasia the milling industry has not yet been sufficiently developed to make the colonies prominent as a source of supply, the annual production in excess of requirement being only about 53,000,000 pounds of flour, or 1,200,000 bushels of grain.

Good Words From South Africa.—The AMERICAN AGRICULTURIST is highly thought of in all parts of South Africa, and for myself I must say that I have gained far more information from its pages than from any of the European agricultural journals.—R. PARKIN, Natal, South Africa.

One Article Worth Several Years' Subscription.—The article on celery blight in the AMERICAN AGRICULTURIST is worth several years' subscription to us.
NEWBERRY CELERY & IMPROVEMENT CO., Mich.

GIVE · THE · BABY

MELLIN'S

FOR INFANTS AND INVALIDS.

TRADE ORA ET LABORA MARK.

FOOD

IF YOU WISH your infant to be well nourished, healthy, and vigorous.

THE · BEST · FOOD

For Hand-Fed Infants, Invalids, Convalescents, Dyspeptics, and the Aged.

Our Book for MOTHERS,

"THE CARE AND FEEDING OF INFANTS,"

Mailed free upon request.

DOLIBER-GOODALE CO., BOSTON, MASS.

"Go Right Straight Back and Get

GOLD DUST

WASHING POWDER."

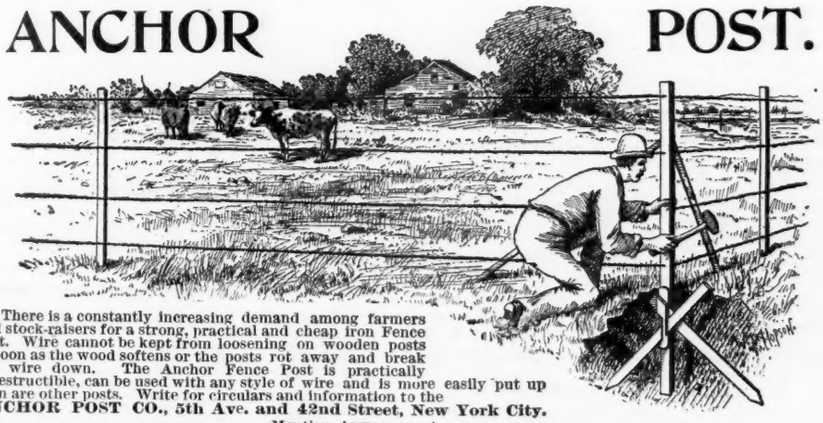
When a woman KNOWS that GOLD DUST Washing Powder makes things clean in half the time, and keeps things clean for half the money, she is naturally annoyed at the "something else" game.

Be sure and get GOLD DUST.

MADE BY N. K. FAIRBANK & CO., CHICAGO,

St. Louis, New York, Philadelphia, Boston, Montreal.

ANCHOR POST.



There is a constantly increasing demand among farmers and stock-raisers for a strong, practical and cheap iron Fence post. Wire cannot be kept from loosening on wooden posts as soon as the wood softens or the posts rot away and break the wire down. The Anchor Fence Post is practically indestructible, can be used with any style of wire and is more easily put up than are other posts. Write for circulars and information to the

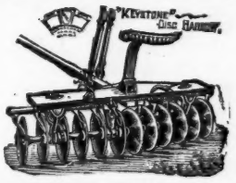
ANCHOR POST CO., 5th Ave. and 42nd Street, New York City.

Mention AMERICAN AGRICULTUBIST.

Ball Bearings make light draft and don't wear out.

"KEYSTONE" DISC HARROW

Double Levers adjust each gang, independently. The best for hillside or level.



Square Shaft square hole discs square hole spools one piece, square hole washers. No loosening or turning on the shaft.

Pulverizes fall plowing, spring plowing, stubble, breaking.

Useful spring, summer, fall. Often saves all plowing. Turns under manure, grain broadcasted, etc. Made 4-5-6-7-8 feet wide. Send for free book "THE REASON WHY."

Scrapers adjusted by drivers foot and rigid or not as you wish.

KEYSTONE MFG. CO., STERLING, ILL.

or ST. LOUIS, KANSAS CITY, COUNCIL BLUFFS, COLUMBUS, O.

(Mention this paper.)

ENGINES If you want to buy a strictly first-class outfit at low figures, address The W. C. LEFFEL CO. Greenmount Av. SPRINGFIELD, O.

When writing to advertisers be sure to mention the AMERICAN AGRICULTURIST.

An Agricultural Student on Butter Making.

[First prize essay of Whitefield Bowers, winning the award offered by the Orange Judd Co. to the short course student in live stock husbandry and dairying at Purdue University writing the best essay on butter making, in competition for $10 worth of agricultural books.]

The processes for making butter are various, as is shown by the great variety in the product. Any one can make butter, but the question that comes before one who would be a butter maker worthy the name is how may the best and most butter be produced, for the better the butter that he makes the fewer competitors will he have, and the greater will be the demand for his goods.

Every year thousands of pounds of butter are made somewhat as follows: The cows are kept in close, dark stables, where dampness is retained, and where the manure is seldom removed, or the cows are exposed to all the changes of weather without proper feeding. In the stable the rough feed, which may be musty, is carried in behind the cows, and litter is left on their backs. The milker blusters about the cows and "makes them stand around," and there may be several interruptions in the process of milking. The milk is drawn into a half-washed pail, into which the cow frequently shakes her litter; the straining is done as carelessly as the milking. When the cream is taken it is left to ripen as best it may. The cream of a churning is of different ages and unequally ripened, new cream being poured into the old at each time of skimming, and the ripening process going on all the time. Here the cream is unequally ripened, some will be in the right condition to churn, some is too old and has become bitter, and perhaps some is not ripened sufficiently to separate the butter under the same conditions as the rest of the cream, and an excess of butter fat is lost in the buttermilk. The churning is apt to be continued too long in vain attempt to make all the butter "come," the grain is spoiled and the butter is a mass filled with buttermilk. To get it out the butter is worked too long, and what grain was left by the churn is spoiled in working, and the butter is a salvy, greasy substance, far from appetizing. On the other hand, it may not be worked enough, and the product is a watery, mottled mass which is no better than the former.

Butter of this kind, when wrapped in a face towel, or thread-bare cloth of questionable previous use, does not bring the highest price on the market, and there is a reason for this. Considering these methods, and knowing that milk and butter readily absorb the odors with which they come in contact, is it any wonder that we find people who advocate the use of that mysterious compound, oleomargarine, on the grounds of uniformity and sanitation?

The best butter is produced as follows, with, of course, latitude in minor details made for different localities and surroundings, and the personality of the butter maker. The cows have dry, warm, well-ventilated and well-lighted stables that are kept clean and sweet-smelling; land plaster is a great help in this line. The sensitive udders should not be chilled by coming in contact with a cold floor that is composed of heat-conducting material. The cows have comfortable stalls that will not allow them to get into their droppings, but to make the assurance of cleanliness doubly sure, a brush or cloth is frequently used on the cows. They have plenty of pure water, not too cold. Their dry feed is well cured, and is sweet, with the exception of silage, and it is given regularly. When on pasture they should not find much rag-weed, and other like weeds, which seriously affect the flavor of the butter. In the stable they are fed from the front, thus no litter is strewn over the stall nor on the backs of the cows. The cows are fed a variety of feed which keeps them in good health, and so keeps up the flow of milk.

The milk is drawn quickly and quietly, quickly because the process of letting down her milk is a strain on the cow, and the sooner done the quicker will she be relieved; if there is too much inter-

(*Continued on Page* 245.)

BUGGIES, PHAETONS, SURRIES.
-$45 up.- -$75 up.- -$85 up.-
D. W. Miller Carriage Co., Cincinnati, Ohio.
Oldest House in the Trade. Catalogue sent free.

SHORTHAND Writing *thoroughly taught* by mail or personally. Situations procured all pupils when competent. Send for circular. W. G. CHAFFEE, Oswego, N.Y.
Bookeeping, Penmanship and Spanish thoroughly taught.

DON'T HESITATE

(TRADE MARK.)
DR. A. OWEN

TO TRY THE OWEN ELECTRIC BELT.

It will certainly relieve, and may cure you, when most every other remedy has failed.

A YOUNG LIFE,

Darkened by Suffering, Brightened and Restored to Health by the Owen Electric Belt.

BURLINGTON, IOWA, Jan. 26, 1893.

DR. A. OWEN, DEAR SIR: I received one of the Owen Electric Belts the 16th day of Dec. 1892, about 6 o'clock in the evening, and I have been using it every day since. I thank you for the good it has done me, for I am nearly restored to my usual health. God alone can tell my sufferings better than pen can write or tongue can tell. It was by reading Mrs. Hattie H. McGowan's letter of Keelersville, Mich., that I first heard of the Owen Electric Belt, and she said that it had done her so much good that she would not do without one, and as my complaint was nearly like hers, and it had done her so much good, I thought I would send and get me one. I don't regret the day that I sent for one, for it has done me so much good that I would not do without one. I am glad to recommend the Owen Electric Belt to any sufferer. Last evening I went to a concert, rode about four miles, the first I have rode for seven or eight months. I am glad to think that your belt has done me so much good, for life is now worth living, as I am in good health—better than I have been for over two years. Yours respectfully,
MISS ESTELLA KIERSEY.

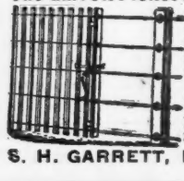
THE OWEN ELECTRIC BELT IS THE BEST ELECTRIC BELT IN THE WORLD. NO EXCEPTIONS.

Persons making inquiries of the writers of testimonials will please inclose self-addressed, stamped envelope to insure a prompt reply.

OUR ILLUSTRATED CATALOGUE
Contains fullest information, list of diseases, cut of Belt and Appliances, prices, sworn testimonials and portraits of people who have been cured, etc. Published in English, German, Swedish and Norwegian languages. This valuable Catalogue will be sent to any address on receipt of 6 cents postage.

The Owen Electric Belt and Appliance Co.
Main Office and Only Factory:
THE OWEN ELECTRIC BELT BUILDING,
201 TO 211 STATE-ST., CHICAGO, ILL.
When writing mention this paper.

The Garrett Picket & Wire Fence Machine



Weaves to the Post. A universal favorite. Thousands in use. **Guaranteed.** Freight paid. Agents are reporting big sales. Machines, Wire, etc., at wholesale direct to Farmers where I have no agent. Catalogue free. Address the manufacturer,
S. H. GARRETT, MANSFIELD, OHIO.

FREE TO ALL!

We will send MODERN STORIES a large 16 page, 64 column, Story Paper, handsomely illustrated and filled with short and serial stories by the best authors, 4 months on trial for 10 cents. If you will send us, at the time you subscribe, the names and addresses of 4 friends who like to read stories, we will send you **Free 10 Complete Novels** by famous Authors, all nicely bound in handsome covers. This liberal offer is made to introduce our paper. Address,
MODERN STORIES, 835 Broadway, New York

MENDING TISSUE

Repairs clothing better than needle and thread; Silk, Satin, Cotton and Woolen, Kid Gloves, Mackintosh, Umbrellas, etc., all colors. Sample yard, 10c. Three yards, 25c. Twelve yards, 65c. Stamps taken. Agents wanted. Address, **STAYNER & CO.**, Providence, R. I.

THE "HANDY"

WANTED agents everywhere to sell our **Stove Polishing Mitten and Dauber. Big Pay.** Every lady wants one. It keeps her hands perfectly clean and produces better Polish than a brush or rag. Sample set, 35c. Address, **Handy Mitten Mfg. Co.,** 32 A Washington St., Boston, Mass.

THOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST.

FOR BEST HAY PRESSES
STEEL PRESSES.

SELF FEEDER
ADDRESS P. K. DEDERICK & CO.
DEDERICK'S WORKS, ALBANY, N.Y.

CELLAR STEPS NO MORE.
A Kitchen Safe with contents, instantly lowered into cellar. It comes up of its own accord. It can be operated anywhere in the room floor, and in those carpeted, and no obstruction. A child can operate it. It is neat and very durable. Also a **Refrigerator** without **Ice**, and **Dumb Waiters.** Address
AURORA SAFE AND WAITER CO.
Box 111 Aurora, Ind.

VEHICLES HARNESS SADDLES
WE SELL AT CUT RATE PRICES.

TOP BUGGY	$38.00
Leather Quarter Top Phaeton	$59.00
Full Leather Top Surrey	$76.00
Road Wagon	$26.00
Half Platform Spring Wagon	$41.50
Single Buggy Harness	$4.20

Write for **Free Illustrated Catalogue** and **Net Cash Prices** of our full line. Address
EUREKA CARRIAGE & HARNESS CO., Cincinnati, O.

WELL MACH'Y *All Kinds, Water, Gas, Oil, Mining, Ditching, Pumping, Wind and Steam: Heating Boilers, &c. Will pay you to send 25c. for Encyclopedia, of 1500 Engravings.* The American Well Works, Aurora, Ill. also, Chicago, Ill.; Dallas, Tex.; Sydney, N. S. W.

Agents Wanted.

RAIN: HAY SPOILED:
Because you did not have a good Hay Carrier, Fork or Hay Sling. Thousands of Farmers say, for the Hay Tools that down them all, here they are. Catalogue free. Address,
OBORN BROS., Box B, Marion, O.

DROPSY TREATED FREE
Positively CURED with Vegetable Remedies. Have cured many thousand cases called hopeless. From first dose symptoms rapidly disappear, and in ten days at least two-thirds of all symptoms are removed. **BOOK** of testimonials of miraculous cures sent **FREE. 10 DAYS TREATMENT FREE** by mail. DR. H. H. GREEN & SONS, Specialists, ATLANTA, GA.

RUPTURE A positive radical cure at home. (Sealed) Book giving full particulars sent FREE. Address
DR. W. S. RICE, Box 444 Smithville, Jefferson Co. N.Y.

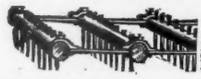
BATHING APPARATUS.
Wholesale and Retail. Send for Circulars.
E. J. KNOWLTON, Ann Arbor, Mich.

OUR DIP Needle Compass is guaranteed the best instrument out for miners' and prospectors' use. B. G. STAUFFER, Bachmanville, Pa.

AN EASY SHAVE. Send 25c for one of our Cordevan Razor Strops, such as all barbers use. Agents wanted. **J. D. FISKE & CO.**, Leather and Findings, 278 Asylum street, Hartford, Ct.

Woven Wire Fence
Steel wire galvanized. Best farm or stock fence! You can make it yourself for **25 CENTS PER ROD.** Catalog free. KITSELMAN BROS. Ridgeville, Indiana.

$20 PHOSPHATE FOR CORN AND POTATOES.
Sold to farmers direct. No Agents.
York Chemical Works, York, Pa.



Harrow, Butterworker, or Churn, wholesale price. BEST. Illustr'd Cat'lg free. Send now. G. H. Pounder, No. 42, Ft. Atkinson, Wis

DITCH DIGGER WILL LOOSEN ANY KIND OF EARTH.
A labor-saving implement capable of cutting a ditch 4 feet deep. Send for circulars.
W. L. COGGSHALL, West Groton, N. Y.

PORTRAITS PICTURE FRAMES
Lowest Prices. Outfit FREE. Good Salary
Write to-day and secure general agency.
Catlg. FREE. ROBT. JOHNS. Mfr.
Dept. 46, 51 & 53 S. May St., CHICAGO

An Agricultural Student on Butter Making.

(*Continued from Page 244.*)

ruption, or for any reason the process is slow, the cow is liable to hold her milk, causing trouble besides the loss of milk; quietly, because the best milk cows are nervous, and excitement means loss. The milk is drawn into a clean pail—every utensil for the dairy must be thoroughly clean. Some people, in their zeal for cleanliness, wash their milk utensils first with scalding water; instead of producing the desired result, this cooks the milk to the vessel in small quantities at a time, which is very hard to remove, and sometimes is noticed only by the effect on the milk afterward put in the vessel. The way to wash milk vessels—tin is the best material for these, it is light, smooth and not easily broken, and is impervious—is to rinse and wash thoroughly with cold water, then scald them, and, if possible, steam them, and they are thoroughly clean. The milk should not remain in the stable until cool.

Here is really the point at which the professional butter maker takes charge, unless the butter is made in the dairy at home where the entire process may be in the same hands. But unless all the essential points of these conditions have been filled, no butter maker can take the milk and produce the very finest quality of butter. So to produce the best butter, we must see that the milk has been made and handled aright before it reaches the butter maker. Straining should be carefully done at milking time, and if for any reason it is kept for any length of time before separating or setting for cream, it should be strained again. The next thing is to secure the cream; the best way to do this is with the separator; time is saved, and the cream is purer, as a very disagreeable substance is eliminated from the cream which otherwise enters into the butter. This is one very good reason why separator butter keeps so much better than gathered cream butter. There are other incidental advantages in the use of the separator.

If the cream is separated by the gravity method, the milk is set in a cool place where the air is sweet, the cream has usually risen sufficiently to skim in twenty-four hours. This may be done by drawing off the milk from the bottom, by pouring off the cream, or by dipping the cream. The cream, if to be churned with subsequent batches of cream, may be kept without much ripening by keeping in a very cool place. When the amount for a churning is ready it is thoroughly mixed together and ripened for a day. It is frequently best to use a "starter" in the cream, of buttermilk, or better still, fresh whole milk or skim milk heated up to 90° F. and kept in an air-tight vessel until used. The cream, when ready for churning, should have a rich, nutty taste, not like sweet cream, yet by no means acid, and it should flow in a smooth, syrupy stream when poured. To avoid "white caps," pour the cream through a coarse strainer into the churn.

The temperature for churning should average about 58° F., but in different seasons of the year the temperature will range from 50° in very hot weather to 64° in very cold. The temperature should be such that the butter will be in granules from the size of a half grain of wheat to the size of a whole grain of wheat in about thirty minutes. The churning should be slow and even, and produces better grain where a churn without the dash is used. The buttermilk is drawn off from the bottom through a strainer so as to save any butter that may run out. Plenty of pure, cold water is put into the churn—as much or more than the buttermilk just drawn out—and the butter washed gently. This water is strained off and more put in until the water that runs off is as clear as when put in; two washings are generally sufficient.

The butter being in this fine granular form, freely allows the escape of the water in the process of working, making firm, solid butter, and it takes the salt evenly, thus preventing the mottled appearance, and giving it a clear, even color. It can be managed so that the salting is done satisfactorily direct from the churn without working, but this is not advised for general use. The amount of salt varies from one-half to one ounce per pound, according to time of keeping and taste of consumer.

Butter of a rich, yellow color is preferred. This is easily secured in spring and summer when cows are on good fresh pasture, and to some extent may

(*Continued on Page 248.*)

MISS FLORENCE E. BEHLER,

No. 37 Alma St., Alleghany, Penna. writes: Derma-Royale works like a charm. My face was covered with freckles and in less than two weeks' time they are all gone. My complexion is now clear and white as a child's. Everyone can see what Derma-Royale did for me.

Mrs. Ella M. Murray, Newton, N. C. writes: I have used one bottle and have found a great change. I had what the doctors here called Skin Leprosy—large brown spots, causing no pain or trouble, except the looks. Now they have entirely gone and I can recommend Derma-Royale highly. Please send me your terms to agents.

May Von Hoene, No. 807 Dayton Street, Newport, Ky. writes: For nearly five years I was afflicted with eczema. My face was a mass of sores and scabs and the itching was terrible, I found nothing that could help me until I tried your Derma-Royale. I have not used quite a bottle and my skin is smooth and clear. I call myself cured, and consider Derma-Royale the greatest remedy in the world.

Miss Lillie Hanna, No. 23 Brainard Block, Cleveland, Ohio, writes: Your Derma-Royale cured my blackheads in two nights.

6183 SUCH TESTIMONIALS RECEIVED DURING 1892.

Nothing will CURE, CLEAR and WHITEN the skin so quickly as

DERMA-ROYALE

The new discovery for curing cutaneous affections, removing discolorations and bleaching and brightening the complexion. In experimenting in the laundry with a new bleach for fine fabrics it was discovered that all spots, freckles, tan, and other discolorations were quickly removed from the hands and arms without the slightest injury to the skin. The discovery was submitted to experienced Dermatologists and Physicians who incorporated it with well known curatives and prepared for us the marvelous Derma-Royale. THERE NEVER WAS ANYTHING LIKE IT. It is perfectly harmless and so simple a child can use it. Apply at night—the improvement apparent after a single application will surprise and delight you. One bottle completely removes and cures the most aggravated case and thoroughly clears, whitens and beautifies the complexion. It has never failed—IT CAN NOT FAIL. It is highly recommended by Physicians and its sure results warrant us in offering

$500 REWARD.—To assure the public of its merits we agree to forfeit Five Hundred Dollars CASH, for any case of eczema, pimples, blotches, moth-patches, brown spots, blackheads, ugly or muddy skin, unnatural redness, freckles, tan or any other cutaneous discolorations or blemishes, (excepting birth-marks, scars and those of a scrofulous or kindred nature) that Derma-Royale will not quickly remove and cure. We also agree to forfeit Five Hundred Dollars to any person whose skin can be injured in the slightest possible manner, or to anyone whose complexion (no matter in how bad condition it may be) will not be cleared, whitened, improved and beautified by the use of Derma-Royale.

Put up in elegant style in large eight-ounce bottles.

Price, $1.00. EVERY BOTTLE GUARANTEED.

Derma-Royale sent to any address, safely packed and securely sealed from observation, safe delivery guaranteed, on receipt of price, **$1. per bottle.** Send money by registered letter or money order, with your full post-office address written plainly; be sure to give your County, and mention this paper. Correspondence sacredly private. Postage stamps received as cash.

Agents Wanted. Send for Terms. Sells on Sight.

Address **The DERMA-ROYALE COMPANY,**
Corner Baker and Vine Streets, - CINCINNATI, OHIO.

$1.22 ONE DOLLAR

and twenty-two cents buys a regular **$30.00 Gold Filled Watch EXAMINATION FREE.** STRANGE as it may seem this is a genuine gold filled stem wind hunting case, either gents or ladies size, beautifully engraved by hand and guaranteed to wear for 20 years. The movement is a very fine stem wind, jeweled nickel American, warranted an accurate timekeeper. WE DON'T WANT A CENT in advance. Cut this advertisement out and send to us if you want the watch sent to your nearest express office C. O. D. subject to examination, if found satisfactory pay the agent $1.22, otherwise DON'T PAY A CENT. To advertise—we sell more watches and cheaper than any other house on earth. This watch retails for $30.00 the world over. Dealers are now not crazy at our most wonderful offer. Order to-day. Costs nothing to order, nothing to examine. Watch costs $1.22. **A. C. Roebuck Corporation.** (Paid up capital, $75,000.) **Minneapolis, Minn.** Send diamond or watch catalogue free.

Mention AMERICAN AGRICULTURIST.

We will furnish the most economical roofing and siding, all styles. Also Metallic Shingles from Iron or Steel with full directions and low prices.

GARRY IRON ROOFING CO., Cleveland, O.
Mention Agriculturist.

RAILROAD, Farm, Garden, CEMETERY, LAWN, POULTRY and RABBIT FENCING. Thousands of miles in use. Catalogue FREE. Freight Paid. McMULLEN WOVEN WIRE FENCE CO., CHICAGO, ILL.

THE NEW MODEL.

Has no Equal in the Market.

Our Latest and best Mower Combines the improvements of years of experience and is unequaled for quality of work, Simplicity and durability.

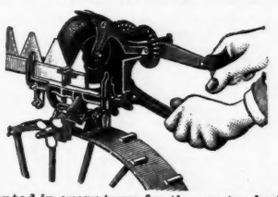
CHADBORN & COLDWELL MFG. CO.
Newburgh, N. Y.
Chicago Warerooms:
55 & 57 N. Clinton Street.
Send for Handsome Souvenir Catalogue.

Largest Manufacturers of Lawn Mowers in the World.

ROBERT C. REEVES CO.,
MANUFACTURERS AND DEALERS IN
Agricultural Implements, Dairy Fixtures, Seeds, Fertilizers, etc.

The **"NEW MODEL"** and **"EXCELSIOR"** Horse and Hand Lawn-Mowers are the best.
A complete stock of all sizes always on hand.
Send for illustrated Catalogue.
185 and 187 Water St., New York City.

The New Model Dutton Mower Knife Grinder.



Agents wanted in every town for the most valuable implement for **farmers' use.** This new and improved Machine is meeting with great success wherever introduced. Every user of Mowing Machines wants this tool. Send for fully

—ILLUSTRATED CIRCULAR—

THE CUTAWAY HARROW CO.,
SOLE MANUFACTURERS,
HIGGANUM, CONN.
New York Office No. 18, Cliff St., New York City.

STEEL LAND ROLLER

The BEST, CHEAPEST and MOST DURABLE.
We also manufacture Grain Threshers and Separators, Sweep Powers, 1, 2 and 3-horse Tread Powers, Hand and Power Corn Shellers, Chilled Plows, Hand and Power Feed Cutters, Grinding Mills, 1-horse Cultivators, Empire Mowers, Hay Rakes, Wood Saws, &c. Price and catalogue free.

S. S. MESSINGER & SON,
TATAMY, PA.

AGENTS AND BOYS

you can make big money selling this Button. It is put on without needle or thread. Everybody buys them. Send 10c and get sample package and terms to Agents. Other novelties. **H. S. HOUSTON, Springfield,** Hampden County, Mass.

BURPEE'S SEEDS GROW!

Farm Annual for 1893 is THE BEST that has ever been issued. It is a handsome book of 172 pages, containing beautiful plates painted from nature, and describing THE VERY BEST. A postal will bring you the book. It will pay you well.

There's no risk in planting Burpee's Seeds, for they're sure to

W. ATLEE BURPEE & CO. Philadelphia, Pa.

475 and 477 N. Fifth St. 476 and 478 York Avenue.

FUCHSIA, TRAILING QUEEN.

This new Fuchsia is the most fascinatingly beautiful of all new plants. Instead of growing erect, its branches are vine-like and trail down over the sides of the pot or basket to a length of two or three feet. The flowers are of enormous size, buds, tubes and sepals being intense scarlet, while the corolla is a deep rich purple, changing to a fine crimson—flowers of both colors showing on a plant to great advantage. Plants bloom all the time, both summer and winter, and frequently show hundreds of flowers at once in enormous drooping clusters. It is the easiest of all plants to grow, as it thrives in any soil or situation. It is the most beautiful window plant we have. Strong plants for blooming at once, by mail, postpaid, **30c. each, 2 for 50c., 5 for $1.00.** Or for only 35c. we will mail one plant each of this Fuchsia and the Charming Mexican Primrose. ORDER NOW. THIS OFFER WILL NOT APPEAR AGAIN. Also, the

Following Special Collections, Postpaid:

12 Gladioli, all colors mixed, flowering bulbs..10c.
3 Tuberoses, New Variegated, Tall and Pearl...20c.
5 grand flowering Cacti, 5 sorts named..... .30c.

All the above including Fuchsia, Mexican Primrose, and Catalogue for only 80c.

OUR BRONZE BLUE CATALOGUE

of Flower and Vegetable Seeds, Bulbs, Plants and Rare Fruits is the most beautiful and complete ever issued. 156 pages, hundreds of Elegant Engravings, Stipple Lithograph Covers, and **7 beautiful large Colored Plates.** We offer the finest standard varieties and Novelties in Flower and Vegetable Seeds, Bulbs and Plants of all kinds, and rare new fruits. **This MAGNIFICENT CATALOGUE will be sent free to all who order anything here offered.** Otherwise send 20c. for it.

JOHN LEWIS CHILDS, Floral Park, N. Y.

SPRAYING PUMPS, CHEAPEST AND BEST. Automatic Mixers, Brass Working Parts, heavy Hose and VERMOREL NOZZLES. Our GARFIELD KNAPSACK and LITTLE GEM lead all others. You can save money by dealing with us. Book of instructions free. FIELD, FORCE PUMP CO., 100 Bristol Ave., LOCKPORT, N. Y.

We Are The Only Firm

GIVING to customers cash discounts on orders. We catalogue that best of all bush beans, the Warren, and that best of all early peas, the Excelsior. In no Seed Catalogue, published in this country or Europe, can be found so great a variety of several of the standard vegetables, and, in addition, there are many choice varieties peculiarly our own, gathered with an intelligent enterprise during over thirty years in the seed business. Though greatly enlarged (the present season) in both the vegetable and flower seed departments, we send our catalogue **FREE** to all. The three warrants still hold good, and our customers may rely upon it, that the well earned reputation of our seed for freshness and purity will continue to be guarded as a most precious part of our capital.

J. J. H. GREGORY & SON,

Marblehead, Mass.

MAILED FREE.

SPRING CATALOGUE OF

Orange County Nurseries

Fifty illustrations of all the good fruits and ornamentals.

Our prices are right. Address

T. J. DWYER, Cornwall, N. Y.

A NEW STRAWBERRY

FOR TRIAL,

To be Introduced if Found Worthy.

A Single Plant will be mailed to any person who will send **10 cts.** and agree not to increase the stock beyond 25 plants in '93 and 100 in '94, and to report on its behavior in July '94. No more than 2 plants sent to one person. I have fruited it 3 years and believe it to be of great promise. The plant is healthy, vigorous, and very productive. **Blossom, perfect; Season, late; Fruit, large, long; usually necked; bright glossy red,** and of excellent quality. **E. CRAWFORD, Cuyahoga Falls, O.**

NEW NUTS NOVELTIES NEW

Lincoln Coreless Pear TREES.—also Japan, Golden Russet, Idaho, Vermont Beauty, and others.

Japan Mammoth, Success, Advance, Chestnuts. Japan, Persian, English Walnuts. Pecans, etc.

Eleagnus Longipes, Trifoliate Orange, Wineberries, Juneberries, etc.

Strawberry, Raspberry, Blackberry, Currant, Gooseberry PLANTS. Apple, Peach, Plum, Quince TREES.

J.S. COLLINS & SON,

Send for Catalogue. Moorestown, N. J.

CLOVER SEED

Lowest prices. All grades. Samples free.

THE WHITNEY-NOYES SEED CO.,

BINGHAMTON, N. Y.

THOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST.

ELLWANGER & BARRY'S

FRUIT and ORNAMENTAL

: TREES :

Roses, Grapes, Shrubs, Evergreens and Hardy Plants.

160-page Illustrated and Descriptive General Catalogue, with Illuminated Cover, **free.**

MOUNT HOPE NURSERIES

ROCHESTER, N. Y.

Established Over Half a Century.

If You Think any kind of a crop will do, then any kind of seeds will do; but for the best results you should plant

FERRY'S SEEDS.

Always the best, they are recognized as the standard everywhere. **Ferry's Seed Annual** is the most important book of the kind published. It is invaluable to the planter. We send it **free.**

D. M. FERRY & CO.

DETROIT, Mich.

FOREST TREES.

Blue Spruce, Douglas Spruce, European Larch, Pines, Spruces, Arbor Vitæs, etc.. etc. *Catalpa Speciosa Seed.* Forest and Evergreen Seeds. **R. DOUGLAS & SON, Waukegan, Ill.**

CROSBEY FROST-PROOF PEACH

Fruits when all others fail. See testimony, description, and colored plates, which will be sent **Free.**

PEDIGREE PLANTS

ALL BEST STRAWBERRIES.

G. H. & J. H. HALE,

Send for catalogue. **South Glastonbury, Conn.**

FREE

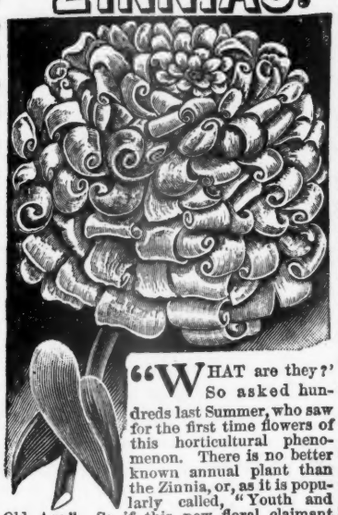
Prettiest BOOK ever Printed.

SEEDS *ONE cent a PACKET,* and upwards according to rarity, scarcity, or cost. Cheapest of any by oz. & lb. 1000 000 extras. *Catalogue free.* **R. H. Shumway Rockford Ill.**

Choice Flower Seeds.

Grown and sold by **MILTON E. FISK, Lunenburg, Mass.** Send for catalogue and receive a sample package free.

HENDERSONS' CURLED AND CRESTED ZINNIAS.



"WHAT are they?" So asked hundreds last Summer, who saw for the first time flowers of this horticultural phenomenon. There is no better known annual plant than the Zinnia, or, as it is popularly called, "Youth and Old Age." So if this new floral claimant is so distinct as to puzzle both professional and amateur horticulturists, we can scarcely hope to present an engraving which will convey any adequate idea of its unique and wonderful beauty. Our Catalogue, mentioned below, contains a beautiful colored plate, on which is shown eight full-sized flowers of as many distinct types, but the seed offered will produce dozens of varieties, not only entirely different from the types portrayed in colors, but of equal, and, in many cases, of much greater beauty. At first glance the flowers suggest a

ROSETTE OF RIBBONS.

The flowers are large, full and double; the petals being twisted, curled and crested into the most fantastic forms, **entirely free from the stiffness** characteristic of all other varieties in this family of plants. A remarkable feature in this novelty is that it should present in so short a time such an overwhelming variety of colors, every possible shade and color found in Zinnias, and, in many classes, only attained after years of culture and hybridization, this new comer has reached at a single bound. It is less than four years ago that we detected, in a large bed of Zinnias at our Trial Grounds, a single plant, from which sprang this marvellous new race—marvellous not only in its distinctiveness, but in the myriad variety of colors with which it has already adorned our gardens. A full history of **HENDERSON'S CURLED and CRESTED ZINNIAS** will be found in our Catalogue offered below.

Price of Seeds (mixed colors) 25 cts. per pkt. 3 pkts for 60 cts. 6 pkts for $1.00.

Postage stamps accepted as cash.

BESIDES

with every order for a single packet or more will be sent, **gratis**, our Catalogue of **"EVERYTHING FOR THE GARDEN"** (the price of which alone is 25 cents), on condition that you will say **in what paper you saw this advertisement.** The 150 pages of this grand Catalogue are strewn with hundreds of new engravings and embellished with eight beautiful colored plates, all of which truthfully portray the "Cream" of everything in **SEEDS** and **PLANTS.** If the Catalogue alone is wanted, it will be mailed on receipt of 25 cents, which can be deducted from first order.

PETER HENDERSON & Co.
35 & 37 Cortlandt St., New York.

GRAPE VINES
Small Fruits.

All old and new varieties Extra quality. Warranted true. *Lowest rates.* **New Descriptive Catalogue Free.**
T. S. HUBBARD CO., FREDONIA, N. Y.

BEATTY'S ORGANS and **PIANOS** $33 up. Want agents. Catalogue **Free.**
Address, **DANIEL F. BEATTY,** Washington, N. J.

Centrosema Grandiflora.
(Look at Me.)

An entirely new plant—a perfectly hardy perennial vine, growing from 6 to 8 feet high, of rare and exquisite beauty. Blooms early in June from seed sown in April, and bears in the greatest profusion inverted pea-shaped flowers from 1½ to 2½ inches in diameter, and ranging in color from a rosy violet to a reddish purple with a broad feathered white marking through the centre. The large buds and the back of the flowers are pure white, making it appear as if one plant bore many different colored flowers at one time. It is one of the most original and striking Novelties offered to the public in many years.

Price 20 cts. per Packet, or 6 Packets for $1.00.

Order now and **Rawson's Hand Book of Seeds** for **1893,** will be sent *free with every order.* It far *surpasses* any *ever issued by us,* being handsomely lithographed and contains beautiful colored plates painted from nature; *honest illustrations* and *descriptions—all the latest Novelties* with full directions *how* and *when* to plant all kinds of seeds. Mention this paper.

W. W. RAWSON & CO., BOSTON, MASS.

A Rare Rose Offer.

AS a means of still further extending the fame of the **D. & C. Roses,** we make the following rare offer to old, new, and intending customers: **Six choice, everblooming Roses on their own roots**—ready to thrive and bloom in pot or garden—**all post paid for 50 cents.** The collection consists of

MADAME ELIE LAMBERT, *new,* color creamy blush, tinted with golden yellow. **MADAME SADI CARNOT,** a dazzling crimson. **COQUETTE DE LYON,** one of the best yellow tea roses in cultivation. **SOUV. DE CLAIRVOX,** *new,* bright, rosy pink. Very handsome. **MADAME ETIENNE,** color rosy flesh. Very highly scented. **MARIE GUILLOT,** one of the most beautiful white roses. All post paid for **50 cents.** If any one who orders, will specify where they saw this offer, we will add an elegant rose of our selection—making seven for **50 cents.**

Our new guide to rose culture which gives full directions for growing every flower worth having, sent free on request, and included in above offer.

The Dingee & Conard Co. Rose Growers and Seedsmen, **West Grove, Pa.**

ORNAMENTAL TREES & PLANTS

PRICES ½ OTHERS

UPON our 250 acres of Nursery we have every class of Trees and Plants that is hardy in a northern climate; Fruit, Ornamental, Nut and Flowering. In our catalogues which are the most complete and elaborate published by any Nursery establishment in the world, all are accurately described and offered at one half the price of tree agents.

Lovett's Guide to Fruit Culture tells all about fruits, their merits and defects, how to plant, prune, cultivate, describes the best novelties, etc. Richly illustrated, several colored plates. Price 10 cents.

Lovett's Manual of Ornamental Trees and Plants is authoritative as well as interesting and instructive. A model of excellence in printing and illustration. Price, with colored plates 15 cents

We successfully ship to all parts of the earth.

J. T. LOVETT CO.,
Little Silver, New Jersey.

ECONOMY IN THE GARDEN.

If you use **DREER'S SEEDS**

half the quantity of seeds will answer, because 90 per cent. germinate. Less quantity of manure will produce better results. There will be no wasted labor. Your crops will be of the first quality; no seconds. Easily marketed or prepared for the table. **DREER'S GARDEN CALENDAR for 1893**—full of garden topics offering the best Seeds, Bulbs, Plants, and requisites, large col'd plate of French Cannas, mailed for 6c. postage.

HENRY A. DREER, 714 Chestnut St., PHILADELPHIA, PA.

MERCER CHERRY.

PEACH Trees, Idaho and Wilder PEARS, Abundance PLUMS and STOCK—by mail postpaid, are our specialties.

The Wonderful new Cherry. **No Worms, Rot or Blight.** For a full description of this new Cherry, write for our new Catalogue.

400 ACRES IN NURSERY.
Illustrated and Descriptive Catalogue Free
JOS. H. BLACK, SON & CO.,
Village Nurseries, ***HIGHTSTOWN, N. J.***

An Agricultural Student on Butter Making.

(*Continued from Page 245.*)

be produced in winter by feeding such roots as carrots, etc. Some cows are much better in this way than others, but all produce a lighter shade in winter on dry feed. Butter color is perfectly harmless, being made from the hull of the anatto seed—which is as harmless as wheat—cut in olive oil or cotton-seed oil. This is the kind that most butter makers use. By the use of this color, butter of uniform color can be made the year round; this is an important item in the market, though the butter should not be over tinted.

The manner of packing varies from tubs of sixty pounds to one pound packages, wrapped separately in cloth or paper, but in any case the butter must be kept from anything that will impart odor, and the butter must be packed smoothly and solidly, and no smearings on the outside of package. The external appearance has much to do with the buyer's opinion of an article.

Sweet cream butter has not been considered because it is in use to a very limited extent only, and the demand is not general for it.

The scale of points for judging butter in this country is as follows: Flavor, 40; grain, 30; color, 15; salt, 10; style of package, 5. How to secure the best in each of these has been considered, and the processes, thoroughly carried out, will make an article of which the maker may well be proud.

Suggestions to Agricultural Societies.

For the purpose of encouraging the cultivation of frnit, the propriety of offering special prizes to township Fruit Clubs for exhibitions at the coming fairs, in addition to those usually offered to individual exhibitors, is worthy of attention. Let the prizes be liberal. For instance, give to the best exhibit $20; to the second best $15; to the third best $10; and to the fourth best exhibit $5. The competition should be subject to such rules as may be necessary to adopt. Perhaps the following would suffice: All fruit to be of the present season's growth, by residents of and within the township from which the exhibit is entered for competition. Each variety to be correctly labeled with name of variety, name of grower, and town in which it was grown. All fruit not in season, as berries, cherries, currants, or gooseberries, may be exhibited in cans of not less than one pint. There must be but one kind of fruit in a can.

Only one prize should be awarded to any one town. If two or more exhibits are made from a township, the judges should consider each upon its merits as compared to other exhibits from the same township, and after selecting the best from each of the townships, shall award the prizes between them. The object being, not to award all to a particularly favored locality, but to encourage cultivation in townships less favorably located naturally for the cultivation of fruit.

Better results will be accomplished if one or more Fruit Clubs should be organized with at least ten members in each township, embracing if possible successful growers of apples, pears, grapes, plums, cherries, strawberries, gooseberries, currants and other small fruits, and holding social meetings at least once a month to consider and discuss varieties, cultivation, spraying, and other subjects of practical use. Each member should take at least one of the many valuable periodicals now published upon horticultural subjects, and also purchase one or more volumes of horticultural books, the whole to be a common library for the use of the club. Each club might own at least one suitable apparatus for spraying fruit trees. In the exhibition, an individual who would take the time and trouble to select and arrange an exhibit, should have the same chance as a club, and the judges in making an award should consider quality and completeness of varieties as regards seasons of maturity, first, and quantity and taste in arranging display, second. WINES R. SKEELS, Secretary Jefferson Co., N. Y., Agricultural Society.

A Useful Magazine.—I have read the AMERICAN AGRICULTURIST from boyhood's days, and have built many a box and contrivance from sketches in your useful magazine. Now that I have boys of my own it is more useful than ever.

R. C. HOLLINS, Todd Co., Ky.

KRESIN

MANUFACTURED BY

"THE CHEMISCHE FABRIK AUF ACTIEN," vorm.

E. SCHERING, Berlin, Germany.

A powerful Antiseptic and Disinfectant, having four times the effect of Carbolic Acid, and being less poisonous and less caustic than the latter. Completely and clearly soluble in water, for Medical, Veterinary and Hygienic Use. An excellent Deodorant and Germicide in very dilute proportions. It destroys all contagious germs and foul odors, and is therefore excellently adapted for the disinfection of excrementitious matter, water-closets, vaults, zincs, waste-pipes, etc. It also destroys mould, fungi and dry-rot in houses.

Indorsed by prominent physicians and extensively used in the Berlin hospitals.

KRESIN is put up in one-pound bottles and ten-pound tin cans, with directions for its use in contagious diseases in the sick-room, and for veterinary, agricultural and domestic purposes.

KRESIN SOAP

5% and 10%

Prepared by J. D. STIEFEL,

Offenbach-on-the-Main, Germany.

KRESIN SOAP serves as a vigorous disinfecting agent for sanitary and cleansing purposes.

The application of **KRESIN SOAP** is especially recommended in contagious diseases, during epidemics, as a wash after operations, and for the treatment of tetter, ring-worm and parasitic diseases generally.

All the various skin diseases to which animals are subjected are favorably affected by this soap.

KRESIN and KRESIN SOAP

Are obtainable of all the leading pharmacists.

Schering & Glatz,

No. 55 Maiden Lane, New York,

SOLE AGENTS.

=ATTENTION=

Market Gardeners, Truck Farmers, Fruit Growers, and Stockmen.

600,000 ACRES OF LAND FOR SALE.

In Tracts to suit purchasers, from **40** Acres upwards. Situated on the line of the

MOBILE & OHIO RAILROAD

— IN THE STATES OF —

Alabama and Mississippi.

Unexcelled for the production of Early Vegetables and Fruit.

MILD CLIMATE, PURE WATER, ABSOLUTE HEALTHFULNESS AND EASY ACCESS TO THE MARKETS OF THE WORLD.

Low rates of freight, quick transit, ventilated and refrigerator cars, and all modern facilities for handling the business.

Write for Full Information, Maps, etc., to **HENRY FONDE**, President of **Alabama Land and Development Co.**, Mobile, Ala., or to **F. W. GREENE**, General Agent Passenger and Land Department **Mobile & Ohio Railroad, 108 N. Broadway, St. Louis, Mo.**

VIRGINIA,

ALBEMARLE COUNTY,

The great fruit, grain and stock-raising section of the State. Winters mild and short. Scenery beautiful. Health fine. Near the great markets. Educational advantages unsurpassed.

Land Good! Prices Cheap! Taxes Low!

Farms and City property for sale. Write to

SAM'L B. WOODS, Charlottesville, Va.

FREE Illustrated Publications, WITH MAPS, describing Minnesota, North Dakota, Montana, Idaho, Washington and Oregon, the FREE GOVERNMENT AND LOW PRICE NORTHERN PACIFIC R. R. **LANDS**

☞ The best Agricultural, Grazing and Timber Lands now open to settlers. Mailed FREE. Address CHAS. B. LAMBORN, Land Com., N. P. R. R., St. Paul, Minn.

"WAY DOWN UPON THE"

FLORIDA Peninsula is a FROST-FREE township of high, healthful land, dotted with clear lakes, free of marsh, filled with Northern people. No negroes, no liquor, no malaria; where pineapples, lemons and oranges grow best, and fresh vegetables are gathered all winter. Homes sold on installments so cheap! "The Florida Homeseeker," monthly, tells all about it. Sample **Free**. Write.

O. M. Crosby, Editor. Avon Park, Florida.

GOOD DO YOU WANT A GOOD —HOME— Near Markets, Schools, Churches and Neighbors. PRICES VERY LOW AND TERMS EASY. Write for descriptive catalogue of **desirable Vermont.**

—ADDRESS—

V. I. SPEAR, Sta. Secretary Board of Agriculture, **Braintee, Vermont.** **FARMS**

IRRIGATION. Facts about irrigation *versus* rainfall, and the **big farm** and **fruit crops** raised by perfect control of an absolute water supply. Send for our fine illustrated publication. THE COLORADO LAND & WATER CO., Ordway, Colorado.

$700 will buy 160 acres of rich, level prairie land in the fertile valley of the James River in South Dakota. Only $200 cash required. This is a rare chance. Write quick if you want it, to **C. C. FLETCHER,** Aberdeen, S. D.

SECURE A HOME IN THE SUNNY SOUTH. No blizzards and no malaria here. Lands of wonderful fertility for sale very cheap and on easy terms. We are glad to furnish information concerning this country. Address **E. L. McGEHEE,** Woodville, Mississippi.

CLAREMONT Land Association, Claremont, **Surry Co., Va.** Offers **600** choice farms; **3,000** hand some town lots on James River, with terms to suit purchasers. Free circular,

VIRGINIA FARM FOR SALE—192 Acres. Great inducements offered. Address **D. H. B. ANDERSON,** Hewletts P. O., Hanover Co., Va.

FOR SALE—A Farm of 698 acres, 300 improved, balance good timber. Situated on B. & O. R. R. A bargain. **A. CROUNSE,** Green Spring, West Va.

MARYLAND FARMS. Book and Map Free. **C. E. SHANAHAN, Attorney, Easton, Md.**

When writing to advertisers be sure to mention the AMERICAN AGRICULTURIST.

The Western Farmer.

All those parts of our country, west of a line drawn from the city of Washington to the city of Chicago, are described as the West by Charles S. Gleed in the *Forum*, because they have most of their interests in common. This West has nine-tenths of the farms, two-thirds of the people, and nearly all the primary wealth, though many of the owners live in the East. The great anxiety of the pioneers for present possession, and a great confidence in future development, together with rank, financial carelessness, in certain general localities and in spots everywhere, used nearly all their credit. Much of the debt thus created was wise and proper, such as the debt for educational purposes, but much of it was unwise, such as parts of the railroad debt. Wise or unwise, it has to be paid, with interest. If a dollar of money had been invested in the West for every dollar of debt acknowledged by it, there would be less suffering.

Every acre of Kansas land has been in competition with every acre of Illinois land, just as both have been in competition with New York and New England land. The abandoned farms of Vermont and New Hampshire are abandoned for the same reason that much land in the West is unoccupied. The competition of vast areas of better land has made their profitable operation impossible. Farms in Ohio and Indiana, which have been profitable and will be again, are now undesirable. The opening of one single irrigating ditch in Colorado, added to the agricultural land of the country an area as large as the State of Connecticut. The building of one Western railroad brought, comparatively near market, more good land than there is in all New York and New England. These millions of acres of farming and mining lands have lowered the prices of farm and mine products.

The West has been at a disadvantage, because it has, necessarily or not, bought all its manufactured articles in the East, and all the profits of transportation have gone East to remain. The West has been at a disadvantage by reason of the inferior skill of its average agricultural and industrial workers. All over the southern West, as the result of antebellum methods, there has been a scarcity of genuine thrift—the thrift that has made France rich, to say nothing of England and New England—while the central and ultramontane West have suffered from a very general feverish, speculative, restless, move-to-the-next-cheap-land-or-boom-town sort of feeling, which has been productive of bad farming, bad contriving and reckless living. Wherever the plow spends the winter at end of the last furrow, and wherever the fences do not command the respect of marauding cows, there men decay and wealth does not accumulate. The man of thrift gets many times as much service from his tin cup, his cook stove, his harness, and his mule as the man of slovenly habits. The West needs to exchange an army of slovenly apprentices for as many well trained journeymen. The exchange will be made in time.

The West has been forced to build its public institutions quickly, where the East has had centuries of time, and the resulting debt has caused the West to be somewhat retarded by the slow but sure rise in the value of the gold which it promised to pay. The West will gain by paying all its debts with rigid honesty. Franchises should no longer be given away. Every city should furnish its own water, gas, transportation and light, either directly or by contract. The West should do more of its own manufacturing. This should begin on the farm and in the home. The old-fashioned New England farm economies were, in substance, merely home manufactures. Out of them our ancestors grew rich. The West should cultivate assiduously all those characteristics which will excite the love and admiration of her own sons and daughters and the stranger within her gates. Men of independent means may live where they please. When such men move from West to East their bank accounts go with them. Beautiful towns, good roads, the best schools, from kindergarten to university, active churches, reasonable laws—all these agencies will save the West far more than they cost. There is not a town, county or State government in the West that may not be better conducted than it now is, for much less money than it now costs. The real people of the People's party are right in their discovery that something is wrong, that there is a degree of "calamity" in the West; but they are wrong in believing what most of their leaders tell them is the cause, that the only trouble is bad law, and the only remedy a change of office holders.

It is to the advantage of the East to maintain the most cordial relations with the West. The West can get along without the East better than the East can without the West. The East has treated the West somewhat as England has treated the United States. The ignorance about the West which prevails in the East characterizes even most of the newspapers. The East is rich and can wait for great advantages and great winnings and disregard the demands of conservative business. The East has come to its present condition by centuries of saving, industry and thrift, and her possession is a power. Eastern financiers should do all they can to discourage the fly-by-night financiers who flit about the West. The Eastern men who use the West as a base of operation for swindling their own Eastern neighbors, are driving a wedge between the East and the West.

Honest Goods at Honest Prices!

HARNESS $5.50 and upward. | BUGGIES $55.00 and upward. | Road Carts $11.50 and upward.

We are selling direct to the consumer at the very lowest cash prices that it is possible to make and sell **HONEST GOODS.** A trial will convince you that we are offering goods of a **QUALITY, DURABILITY** and **ELEGANCE NEVER BEFORE PRODUCED.** Write for free Illustrated Catalogue, containing all information, and prices that will please.

KEMPER MANUFACTURING CO., CINCINNATI, OHIO.

HAIR ON THE FACE, NECK, ARMS OR ANY PART OF THE PERSON

QUICKLY DISSOLVED AND REMOVED WITH THE NEW SOLUTION

MODENE

AND THE GROWTH FOREVER DESTROYED WITHOUT THE SLIGHTEST INJURY OR DISCOLORATION OF THE MOST DELICATE SKIN.

Discovered by Accident.—In Compounding, an incomplete mixture was accidentally spilled on the back of the hand, and on washing afterward it was discovered that the hair was completely removed. We purchased the new discovery and named it MODENE. It is perfectly pure, free from all injurious substances, and so simple any one can use it. It acts mildly but surely, and you will be surprised and delighted with the results. Apply for a few minutes and the hair disappears as if by magic. It has no resemblance whatever to any other preparation ever used for a like purpose, and no scientific discovery ever attained such wonderful results. **IT CANNOT FAIL.** If the growth be light, one application will remove it permanently; the heavy growth such as the beard or hair on moles may require two or more applications before all the roots are destroyed, although all hair will be removed at each application, and without the slightest injury or unpleasant feeling when applied or ever afterward.—MODENE SUPERCEDES ELECTROLYSIS.—

—RECOMMENDED BY ALL WHO HAVE TESTED ITS MERITS—USED BY PEOPLE OF REFINEMENT.—

Gentlemen who do not appreciate nature's gift of a beard, will find a priceless boon in Modene which does away with shaving. It dissolves and destroys the life principle of the hair, thereby rendering its future growth an utter impossibility, and is guaranteed to be as harmless as water to the skin. Young persons who find an embarrassing growth of hair coming, should use Modene to destroy its growth. Modene sent by mail, in safety mailing cases, postage paid, (securely sealed from observation) on receipt of price, **$1.00** per bottle. Send money by letter, with your full address written plainly. Correspondence sacredly private. Postage stamps received the same as cash. (ALWAYS MENTION YOUR COUNTY AND THIS PAPER.)

LOCAL AND GENERAL AGENTS WANTED. } MODENE M'F'G CO., CINCINNATI, OHIO, U. S. A. Manufacturers of high grade hair preparations. *Register your letter at any Post-office to insure its safe delivery* } CUT THIS OUT AS IT MAY NOT APPEAR AGAIN

We offer $1.000 for failure or the slightest injury. EVERY BOTTLE GUARANTEED.

HENDERSON'S SPECIAL GRASS MIXTURES

FOR HAY OR PERMANENT PASTURE.

These mixtures will give a pasture that will stand without renewal for 20 years. Thousands of acres are now sown with them annually.

Henderson's **American Farmers' Manual,** offering the most complete list of **Grasses, Fodder Plants, Cereals and Root Crops,** mailed free on application.

PETER HENDERSON & CO. 35 & 37 Cortlandt St., New York

I TELL YOU, SALZER'S SEEDS ARE BEST: LOOK AT THE YIELDS= CORN 130 BUS. PER ACRE OATS 134 BUS. PER ACRE BEANS 100 BUS. PER ACRE BARLEY 10[illegible] BUS. PER ACRE

Such glorious yields you may have by planting **SALZER'S SEEDS.** They never fail. They always sprout, grow and produce. 60,000 Bushels Potatoes Cheap.

85 PKG, EARLIEST VEGETABLE NOVELTIES, sufficient for a family, Postpaid for $1.00.

10 Farm Grain Samples, 8c; with cata. 16c. 11 Grass & Clover Samples 10c; with cata. 18c

8 Field Corn Samples 12c; with catalogue 20c.

Our mammoth Seed Catalogue costs over $0.000. It is mailed you upon receipt of 8c postage. Its a valuable work, worth ten times its cost to you.

JOHN A. SALZER SEED CO. LA CROSSE, WIS

JERRARD'S SEED POTATOES

are always THE BEST. Grown from pedigree seed in the new lands of the cold North-East, they yield Earliest and largest crops in every climate.

JERRARD'S NORTHERN SEEDS

produce earlier vegetables than any other on earth.

MY NEW ILLUSTRATED CATALOGUE MAILED FREE. Address

GEORGE W. P. JERRARD, CARIBOU, MAINE.

EARLY OHIO GRAPE ROSES

Ten days earlier than any other variety. NIAGARA and 100 other kinds. ORNAMENTAL SHRUBS, CLEMATIS, TREES, &c. Send for Catalogue. Mailed free. Mention this paper. Address C. S. CURTICE CO., Portland, N.Y.

FARMING IN FOREIGN LANDS.

Shipments of sheep from Russia to France are being largely increased.

In East Prussia a larger area of land than usual is being cultivated to sugar beets, owing to the low price of grain.

A consignment of 236 cases of apricots from Capetown, South Africa, was received in the English market last month.

The area sown to cotton in India for the coming crop is 500,000 acres less than a year ago, the principal shortage being in late cotton.

Ireland is improving the manufacture of its dairy products to such an extent that it is largely superseding Denmark in supplying the English market.

A large number of tea plantations in India are offered for sale, the owners finding that they have not been paying expenses and are not desirable property to hold.

There are two or three grass crops in Switzerland every year, the first in the beginning of May, the second at the end of July and a third often at the end of October.

The French potato crop of 1892 amounted to 440,000,000 bushels, as compared with a yield of 390,000,000 bushels as the average annual crop in the previous ten years.

Ramie fiber is being used to a considerable extent in France as a substitute for silk in the manufacture of silk goods. It is also being used in the manufacture of paper that requires special strength.

Dijon mustard is sown on clear charcoal beds in the forests of France. The charcoal gives the mustard a peculiar flavor and its piquancy is heightened by its being mixed with new wine of a precise degree of acidity.

The gardeners of France held a large meeting and decided to create a society for mutual help with a provident section and a pension house. It provides for its members against stoppage of work, disease and illness.

Clover and cinnamon flourish in the hot climate and damp soil of the low plains of Madagascar. The wild pepper of the forests produces abundantly and the berries have become an article of trade in all the markets in the interior of the country.

Extensive coffee plantations are being set out on the Hawaiian Islands, one of them expecting to have between 50,000 and 75,000 trees set out this season before April 1st. There are also several foreign companies formed and just beginning to break ground.

Various kinds of vegetables are cultivated by the people of Madagascar and with comparatively little labor. Rice forms the staple article of consumption, while manioc, the sweet potato, yams, arum, beans and earth nuts are among the articles cultivated to increase and vary the food supply.

The flax industry of New Zealand is very fluctuating. In 1860 this colony produced 61 tons of flax. Between 1869 and 1875, the output varied between 2,000 and 6,000 tons per annum, but in 1876 it fell off again to 640 tons; in 1889 it increased to 17,000 tons and to 21,200 tons in 1890, but then fell off again to 16,000 tons in 1891.

The area of cultivated land in Switzerland is steadily diminishing as the meadows prove more remunerative. Good arable land commands from $300 to $1,500 per acre, while $2,000 per acre is paid for choice vineyard land. About one-half of the land is sown to grain, the remainder being used for potatoes, turnips, green corn, clover and vegetables.

The colony of New South Wales had 124 creameries at the end of last year, the estimated value of the plant and machinery exceeding $300,000. The total quantity of butter made at these creameries was 7,661,000 pounds, besides which 10,702,000 pounds were made on dairy farms. To make this total product of 18,363,000 pounds of butter there are 343,500 dairy cattle in the colony.

An electric dairy has been opened on the farm of Baron Eichel near Hildburgshausen in Germany where 120 cows are kept. The centrifuge is worked by an electric motor of six horse power which is placed on the banks of a river and is connected with a secondary dynamo of two horse power. It sets in motion the centrifuge for working the milk and also works a threshing machine, two chaff cutters, a beet cutter, a manure mill, an oil cake crusher and a circular saw. The current is also used for lighting purposes. The total cost was about $3,250.

In England there are about 3,000 owners of estates above one acre in size, while in France there are 7,000,000 such owners. In England the average extent of a single farm is 390 acres, in France 10 acres, with 4,000,000 owners holding properties of two acres, while farms of 200 acres are so scarce that they can be counted on the fingers.

The Department of Agriculture of Austria gives the following returns of the 1892 crops, excluding Hungary:

Crops.	*Acres.*	*Bushels.*	*Bu. per Acre.*
Wheat.....	2,759,000	45,670,000	16.55
Rye.....	4,838,000	81,566,000	16.86
Barley.....	2,860,000	57,942,000	20.26
Oats.....	4,620,000	103,594,000	22.42
Maize.....	907,000	15,349,000	16.93

The minister of agriculture for Belgium reports the position and progress of agricultural instruction in that kingdom to have been so satisfactory that several independent establishments are being organized, which will be indemnified to a certain extent for expenses incurred in the arrangements made for agricultural and horticultural teaching, the work to be done in accordance with a programme prepared by the government.

A new French variety of potato is the Geant Sans Pareille. It is of extraordinary vigorous growth and is said to merit a place by the side of, if not above, the Blue Giant and Imperator, which are both renowned for large production and richness in fecula. It has given yields of 18 tons per acre. Its large tubers often weigh nearly two and one-fourth pounds, and are of a beautiful rounded form, yellow skin and flesh of good quality. It is claimed for this new variety that it meets all needs, as it can be used for industrial purposes as well as for food.

New Zealand apparently has no limit to its wool-producing capacity. There are vast tracts of land that can scarcely be utilized for any other purpose than sheep runs, yet there is a great deal of land now used for sheep runs that could be profitably employed for agriculture. The climate of New Zealand is admirably adapted for sheep and wool growing purposes, the average annual increase in a breeding flock in fair condition being about 70 per cent. Flocks of Merino clip four pounds all around, and sometimes as high as five pounds. The natural vegetation of the country consists of forest, fern and grass.

The Australian harvest is estimated as follows:

Colony.	*Acres.*	*Bushels Per Acre.*	*Yield in Bush.*
Victoria.....	1,100,000	10	11,000,000
New South Wales...	400,000	10	4,000,000
Queensland.....	40,000	9	360,000
South Australia.....	1,500,000	8	12,000,000
West Australia.....	40,000	8	320,000
New Zealand.....	300,000	24	7,200,000
Tasmania.....	25,000	8	200,000
Total.....	3,405,000	77	35,080,000

This yield for 1892-'93 compares with 31,305,000 bushels in the 1891-'92 season, 41,500,000 bushels in the 1890-'91 season, and 39,600,000 in the season of 1889-'90. Later advices report the South Australian harvest as reduced.

Madagascar is well supplied with fruit, some indigenous to the country, other kinds introduced. Among the former, the banana holds first place. It is very plentiful, of many varieties, and all good. The lemon and lime, the rose-apple, and guava, also abound. The orange, one of the introduced fruits, has become an article of commerce at Tamatave, while the vine, when properly cared for, furnishes splendid crops of grapes, which are harvested during the months of December and January. Besides these are the citron, melon, pine-apple, loquat, alligator pear, custard apple, mango, peach, mulberry, pomegranate, and quince. Figs, in great quantities, but of poor quality, grow wild in many parts of the forest.

Owing to the great difference in elevation of the surface, there is much diversity in the products of Switzerland. In the valleys the summer heat is tropical, while the surroundings heights are robed in perpetual snow. From the lowest level on the southern slope of the Alps, say about 650 feet, where the lemon, the almond and the fig ripen in open air, and thence ascend to an elevation of 9,500 feet, where every vestige of the most primitive artificial cultivation ceases, one might trace nearly every species of vegetable growth known in Europe. Cereals are grown up to 3,600 feet, rye succeeds up to 5,900 feet in the Grisons, and to 6,500 feet on the sunny slopes of Monte Rosa and other high mountains.

New South Wales covers 196,000,000 acres of land. Over 67 per cent., or 133,000,000 acres, are under lease, 23 per cent. or 46,000,000 acres are alienated, and the remaining 10 per cent. includes reserves for public purposes, roads, streets, and routes for traveling stock. Of the total area alienated, nearly one-half has been sold in fee simple, five per cent. has been sold on deferred payments, six per cent. has been granted without purchase, and the remainder at the close of last year was being alienated on the deferred payment system. Of the leased land, 44 per cent. was held under pastoral lease, and 8,655,000 acres were homestead leases. The annual rental from the 58,417,000 acres covered by pastoral leases was $1,850,000.

French butter of all qualities and quantities is shipped to Morlaix in Finisterre. At the factories there it is emptied into large kneading troughs, graded and worked over with large wooden spoons. It is then forced through the fluted rollers of a kneading mill, worked by steam; these two operations extracting whatever milk or water remained in the butter. The best grades are washed, worked, salted and colored, and packed in earthen jars containing from 10 to 60 pounds of butter. White tissue paper is put over the butter, and salt spread over the paper. The jar is covered with strong canvas and hoops of straw, to prevent breakage, and it is then ready for shipment to England, Norway, Sweden, and the largest markets in France.

In London the consumption of milk has been increasing, the supply is short, yet the price does not rise. It is estimated by the managing director of one of the large dairy companies, that London consumes upwards of 42,000,000 gallons of milk yearly. The manager of the Great Western railway stated before the joint committee of both Houses of Parliament last year, that his company brought 11,000,000 gallons per annum into London. The Midland brings some 7,000,000 gallons, the Great Northern 3,000,000 gallons, the Southwestern 6,000,000 gallons, the Northwestern 7,000,000 gallons, the Great Eastern 3,000,000, and the Southern lines 2,000,000 gallons. Mr. Barham calculates that the milk produced in London and the immediate neighborhood is about 4,000,000 gallons.

South Australian statistics, for 1892, show that there were 2,533,000 acres of land under cultivation, against 2,650,000 acres in 1891. The area under wheat was 1,552,000 acres, as compared with 1,674,000 acres a year before, while the harvest was 6,436,000 bushels, as against 9,400,000 bushels, a decrease of 32 per cent. The area cut for hay was 304,000 acres, as against 345,000 acres in 1891. There are 12,300 acres, with 7,177,000 vines planted thereon, an increase of nearly 3,000 acres and 1,500,000 vines during the year. There are 189,000 horses in the colony, 399,000 horned cattle, 7,646,000 sheep, 82,000 hogs, and 1,000 fowls. The wool exported was 51,562,000 pounds, valued at $8,100,000. During the current season of 1892 and 1893, South Australia has been extremely favored, both as to temperature and moisture; and all crops promise heavy yields. By cable it is learned that the wheat harvest has been immense, and there will be a large quantity for export.

The district around Fort Dauphin, Madagascar, is extremely rich in vegetation, and contains an abundance of useful animals. The cattle are not so numerous, but they are of finer quality than those found in the northern parts of the island; sheep, with their large fat tails that are looked upon as the most delicate part of the mutton, and goats are plentiful. Pigs, both domestic and wild, are abundant. The latter inhabit the forest lands, but prey upon the plantations of the natives to such an extent that they become dreaded, and various devices have been employed to get rid of them. They are hunted with dogs trained for the purpose, and pits are dug in their haunts, having sharpened stakes projecting from the bottom, and the mouths hidden by rushes carefully concealed by the earth. The flesh of these wild hogs is hard, but well-flavored; they have a peculiarly long snout, and are covered with dark, reddish-brown hair. Poultry (turkeys, geese, ducks, and fowls), is both abundant and very cheap, and quails and wild fowl are met with in great numbers in the plains and marshes.

We act
liberally
and
fairly
with afflicted persons
and prove to their
satisfaction
that they have
NOT TRIED
ELECTRICITY
AS A CURATIVE
UNTIL THEY HAVE
WORN THE
PULVERMACHER
ELECTRIC BELT.

This involves
proving
that all other
belts and
appliances
are either
COLORABLE
IMITATIONS
or are ENTIRELY
NON-ELECTRIC.

We undertake
to do these things
and cannot
afford to make any
misrepresentations.

This is in conformity
with our business policy
as PIONEERS
in the manufacture
of electric body-wear
—larger manufacturers
and dealers
than all other
concerns combined.

APPLY FOR PARTICULARS.

PULVERMACHER'S ELECTRIC BELT

Cures All Nervous, Painful, and Weakening Diseases,

Nervous and General Debility, Physical Weakness, Tired Feeling, All Nervous Complaints, Dyspepsia, Neuralgia, Rheumatism, Female Ailments, Stomach, Liver and Kidney Disorders, Etc., Etc.

PULVERMACHER'S ELECTRIC BELT *Will Last for Years*—SAVING MUCH SUFFERING, WORRY, TIME AND MONEY.

INTRODUCED IN ENGLAND, FRANCE AND GERMANY IN 1843; IN THE UNITED STATES 1876.

THIRTY-ONE AMERICAN AND FOREIGN PATENTS HAVE BEEN GRANTED, INCLUDING ALL LATE IMPROVEMENTS.

INDORSEMENTS AND REPUTATION WORLD-WIDE. HONEST TESTIMONIALS.

☞ *PRIVATE LISTS OF ADDRESSES OF FORMER PATIENTS CURED FIVE TO FIFTEEN YEARS AGO SENT TO EARNEST APPLICANTS FOR THE PURPOSE OF CORRESPONDENCE.*

Don't Waste Your Time and Money Trying New-Fangled Medical Notions; Time-Tested Methods are the Best, Safest, and Cheapest.

WEIGH CAREFULLY THE VALUE OF TESTIMONIALS OF CURE OBTAINED FROM NOTORIETY-CRAZED PERSONS WHOSE "LIKENESSES" APPEAR IN THE NEWSPAPERS.

You Run No Risk with Us. It is to the Interest of Sick, Weak or Ailing Persons to Write to Us. We Can be of Service to Them.

READ THE FOLLOWING UNEXAMPLED OFFER:

Sample of Belt Sent Free.

We take pleasure in sending by mail to afflicted persons who may be interested in our electric treatment for home use, a FREE sample of the Pulvermacher Electric Belt. This sample enables them to form their own opinion of its electric character, and to see at a glance that it is different in every particular of construction and in the materials used from any of the so-called curative appliances which may have been brought to their notice.

We are the only manufacturers of genuine and durable Electro-Curative Appliances, and WE ALONE send FREE samples for examination. THESE SAMPLES ARE OF REGULAR SIZE (PERFECT FAC-SIMILES), AND CORRESPOND IN EVERY WAY WITH OUR CLAIMS AND DESCRIPTIONS.

WE DO JUST AS WE SAY.

The afflicted have been imposed upon to such an extent by dealers in all sorts of so-called electric, magnetic and voltaic belts and other appliances that it gives us pleasure to state that our plan of sending samples has been the means of forestalling further imposition by SATISFYING AFFLICTED PERSONS BEYOND QUESTION that the Pulvermacher Electric Belt is the ONE and ONLY BELT suitable in every way for practical medical purposes.

The Sample of Belt is sent by return mail, secure from observation, to every ailing person on receipt of "Order for Sample" form below. It may also be had on application by letter.

ORDER FOR SAMPLE.

[INCLOSE THIS ORDER WITH NAME AND ADDRESS IN FULL.]

Pulvermacher Galvanic Co., 172 Race St., Cincinnati, Ohio.

Send me by mail, without charge, a Sample of the Pulvermacher Electric Belt, as proposed by you.

*Name*_____

*Town*_____ *County*_____ *State*_____

WITH THE SAMPLE WE MAIL A COPY OF **"General Pamphlet"** OF 112 PAGES, CONTAINING FULL PARTICULARS OF THESE NOTED CURATIVE APPLIANCES.

Address, PULVERMACHER GALVANIC CO., 172 Race Street, CINCINNATI, OHIO.

Preserve the above "ORDER FOR SAMPLE" or apply NOW, while you have our address before you, as this offer appears in the papers only occasionally.

Please mention The AMERICAN AGRICULTURIST.

A GREAT INDUSTRY.

The American Hog.

HOW IT HAS MORE THAN DOUBLED IN NUMBERS AND VALUE WITHIN TWENTY-FIVE YEARS—AN ENORMOUS FARM INDUSTRY—IMPORTANT FACTS AND FIGURES—THE PRESENT VALUE OF HOGS—EXPORTS OF PORK PRODUCTS—A WORD OF WARNING.

The American hog has always been a part of our national history, and the subject of more or less international humor. It has taken such a firm hold as a very important branch of our farming industries as to excite somewhat envious feelings among less fortunate nations, but the American quadruped is liberal-minded, and can afford to contemplate with equanimity their little jealousies, so long as it puts money into the pockets of American farmers.

The hog is now regarded with much more respect than for twenty years past, owing to the very sudden advance in its value, and the AMERICAN AGRICULTURIST has been to a large amount of trouble and expense in securing facts and figures, showing the growth and value of the hog industry since 1860, together with its position of to-day. All this information is extremely interesting, and should be preserved for future reference. It is invaluable to farmers, and will be a guide to them in judging of the future course of the hog market.

Back in the Sixties.—At the beginning of 1860, just 33 years ago, there were 33,512,867 hogs in the United States, worth an aggregate sum of $152,483,545, an average price of $4.55 per hog. A year ago the number of hogs had increased to 52,398,019, worth $241,031,415, an average value of $4.60, showing an increase, in the 32 years, of nearly 19,000,000 hogs, and in value of nearly $90,000,000. At the beginning of February, 1893, the total number of hogs in the country was 46,094,807, a decrease of 6,300,000, as compared with a year ago. In value, however, they made the enormous increase of $54,400,000 within the year, being now worth close upon $300,000,000, while the average value last month was $6.41 per hog, as compared with $4.60 last year, a gain of $1.81 per hog in the twelvemonth.

The Comparative Supply.—Giving statistics from the whole United States will not be sufficiently interesting to farmers in different sections of the country. We, therefore, separate the number of hogs during the past 33 years, grouping them by States, at intervals of ten years, from 1860 to 1890, and also giving the figures for 1892 and 1893. Beside the total number of hogs in each section, on the periods stated, their aggregate and average values for the whole country are stated in the following table:

THE NUMBERS AND VALUES OF HOGS.

States.	1860.	1870.	1880.	1890.	1892.	1893.
New England.....	326,176	241,000	362,133	347,618	337,833	335,929
Middle.....	2,614,236	2,094,681	3,054,283	2,964,895	2,905,228	2,723,700
Southern	5,350,300	8,832,739	12,219,733	13,135,311	13,241,515	12,547,652
Western	14,674,190	13,380,571	31,226,052	34,055,009	34,988,766	29,694,097
Pacific	547,965	585,578	819,499	1,099,947	924,677	793,429
Total Numbers.....	33,512,867	25,134,569	47,681,700	51,602,780	52,308,019	46,094,807
Total Values.....	$152,483,545	$187,191,502	$145,781,515	$243,418,336	$241,031,415	$295,426,492
Value per Hog.....	4.55	7.00	4.58	4.72	4.60	6.41

An examination of the foregoing table is full of interest. It shows the steadiness of the New England States, which now have less than 20,000 more hogs than in 1860. The Middle States show an increase of only 109,000 during 33 years, the Southern States a decrease of 2,800,000, the Pacific slope a gain of but 250,000, while the great Western States have now almost double the number of hogs that they had in 1860. In all sections of the country there was a heavy falling off in numbers between 1860 and 1870, excepting a slight gain on the Pacific coast. Between 1870 and 1880 there was an increase of almost 100 per cent. throughout the entire country, an increase of eight per cent. between 1880 and 1890, while this year the total number is even less than it was in 1880.

The Effect of High Prices.—It is of most importance to note the direct bearing of the price of hogs upon the supply. The lowest value of hogs was $4.55, in 1860, and this cheapness caused farmers to turn their attention to other crops, as being more valuable; hence there was a reduction of 8,400,000 in number during the ensuing decade. This decrease, when our population was largely on the increase, forced the value of a hog up to seven dollars, the result being that the supply was nearly doubled in the next decade—up to 1880. Then values fell back to $4.58, just about where they were twenty years previously. Since then the supply has been more steadily regulated, without any great fluctuation in value, and the price of hogs throughout the country averaged $4.60 at the beginning of 1892, as compared with $4.55 in 1860.

A Word of Warning.—Farmers should take warning from the experience of 1870. The decrease in the number of hogs that year, with the consequent sharp advance in prices, caused an enormous subsequent supply, a supply that was in excess of the demand. The result was that values receded sharply. Shall we now have a case of history repeating itself? The supply of hogs decreased by 8,400,000 between 1860 and 1870. It has decreased by 6,300,000 during 1892. The price advanced $2.45 per hog between 1860 and 1870, and $1.81 between 1892 and 1893. The total supply increased by 22,500,000 hogs between 1870 and 1880, after the seven-dollar price was reached, and then the price decreased by $2.42, back almost to where it was twenty years before. If farmers now rush into raising an excessive supply, as was the case twenty years ago, is there not a probability of prices making a corresponding decrease?

Hogs are Worth Most in New England.—It will be well for farmers to ponder over these facts before putting too much of their money into hogs and neglecting other farm products. There seems but little doubt that prices are liable to rule high during the remainder of this year, but a sudden large supply is likely to cause a sharp reaction, and it will, therefore, be safer for farmers not to have all their eggs in one basket. This word of warning should be chiefly heeded by farmers living in those sections where prices have advanced the most, which is in the New England, the Middle, and the Western States, where prices

(*Continued on Page 253.*)

OUR NEW 1893 FLOWER SEED OFFER.

A Magnificent Collection of **FLOWER SEEDS**

200 Varieties, FREE!

An Unparalleled Offer by an Old-Established and Reliable Publishing House! THE LADIES' WORLD is a large 20-page, 56-column illustrated Magazine for ladies and the family circle. It is devoted to stories, poems, ladies' fancy work, artistic needlework, home decoration, housekeeping, fashions, hygiene, juvenile reading, etiquette, etc. To introduce this charming ladies' paper into 100,000 homes where it is not already taken, we now make the following *colossal offer: Upon receipt of only* **12 Cents** *in silver or stamps, we will send* **The Ladies' World** *for* **Three Months,** and to each subscriber we will *also send* **Free** *and postpaid, a large and magnificent* **Collection of Choice Flower Seeds,** *two hundred varieties,* including Pansies, Verbenas, Chrysanthemums, Asters, Phlox Drummondi, Balsam, Cypress Vine, Stocks, Digitalis, Double Zinnia, Pinks, etc., etc. Remember, twelve cents pays for the magazine three months and this entire magnificent Collection of Choice Flower Seeds, put up by a first-class Seed House and warranted fresh and reliable. No lady can afford to miss this wonderful opportunity. We guarantee every subscriber many times the value of money sent, and will refund your money and make you a present of both seeds and Magazine if you are not satisfied. Ours is an old and reliable publishing house, endorsed by all the leading newspapers. We have received hundreds of testimonials from pleased patrons during the past five years: *"I had beautiful flowers from the seeds you sent me two years ago, and from experience know the seeds are as advertised."*—Mrs. N. C. Bayum, Dana, Wis. *"Myself and friends have sent for various things advertised by you, and have found them to be entirely satisfactory."*—M. J. Davis, Brooklyn, N. Y. Mrs. Henry Ward Beecher (a regular subscriber), and Grace Greenwood, each ordered our seeds last season. Do not confound this offer with the catchpenny schemes of unscrupulous persons. *Write to-day*—don't put it off! Six subscriptions and six Seed Collections sent for 60 cents.

SPECIAL OFFER! To any lady sending us 12 cents for above offer, *and naming the paper in which she saw this advertisement,* we will send *free,* in addition to all the above, one packet of the celebrated **Eckford Sweet Peas,** embracing the newest varieties, including **Boreatton, Ian Eckford, Splendor, The Queen, Orange Prince, Apple Blossom, etc.** Sweet Peas are the most popular and fashionable bouquet flowers now cultivated, and the Eckford Varieties which we offer, are the largest, finest and most celebrated known. They grow to a height of 6 feet, and produce for three months a continuous profusion of fragrant blooms of the most brilliant coloring.

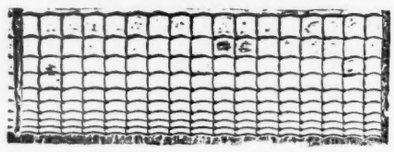
ANOTHER GREAT OFFER! Upon receipt of **Thirty-five Cents** (our regular subscription price) we will send **The Ladies' World** for **One Year,** together with our magnificent **Collection of Choice Flower Seeds** above described, likewise one packet of the extensively advertised and justly celebrated **Eckford Sweet Peas.** Address:

S. H. MOORE & CO., 27 Park Place, New York.

Decisive. The National Butter and Cheese Makers' Convention.

Butter made by C. W. Smith, butter maker for Jefferson Colvin, of Colvin, Park, Ill., received highest score, 97, captured sweepstakes, $700 in prizes and the gold medal of the association at the Butter and Cheese Makers' National Convention, held at Dubuque, Ia., February, 1893. This butter was colored with Thatcher's Orange Butter Color. Other butter color manufacturers offered special premiums as high as $500 each for best butter colored with their colors, which brought an unprecedented number of entries in all classes. This victory for the celebrated Thatcher's Color is decisive, and teaches butter makers that there is no safety in using anything but the best. Thatcher's color is just that. Butter makers cannot afford to ignore this testimony or use any other color.

SPRAY
YOUR FRUIT TREES & VINES
Wormy Fruit and Leaf Blight of Apples, Pears, Cherries, and Plums prevented; also Grape and Potato Rot—by spraying with Stahl's Double Acting Excelsior Spraying Outfits. Best in the market. Thousands in use. Catalogue, describing all insects injurious to fruit, mailed Free. Address
WM. STAHL, Quincy, Ill.



THE GREAT PACIFICATOR.

Three years ago one of the best managed Railroads in this country commenced using our fence. Next year they will use more than ever. The officer in charge says, "Whenever there is any trouble with adjoining farmers about the line, we have only to promise to put up Page Fence, and can make settlement at once."

PAGE WOVEN WIRE FENCE CO.,
ADRIAN, MICHIGAN.

PAGE WIRE FENCE CO. of Ontario, L'td.
Walkerville, Ont.

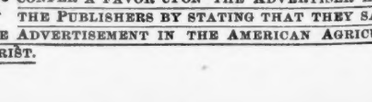
BOOKS FOR FARMERS!

STOCK BREEDERS, GARDENERS, FLORISTS FRUIT GROWERS,

And all others interested in **Rural Life.** We supply any book published on the above subjects. **CATALOGUE** of **600** standard works **Sent Free.**
ORANGE JUDD CO., New York.

HANG YOUR DOORS

on the Barn, or on any other Building, with **Stanley's Corrugated Steel Hinges,** as they are much **stronger** and **handsomer** than the old style and **cost no more.**



They can be had Japanned or Galvanized at slight additional cost, thus preventing **rust.** If no hardware dealer in your vicinity keeps them, write us.
THE STANLEY WORKS, New Britain, Conn.

THOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST.

Factory Prices

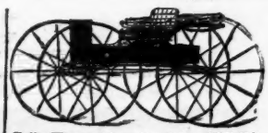
Buggies, Carriages, Spring Wagons and Harness

Fully Warranted. Our Price, $38.50. Compare with Usual Retail Price.

Built for service and **Fully Warranted.** No "shoddy" stock. Every Buggy sold is a first-class advertisement for the sale of others. We can certainly

HELP YOU TO SAVE MONEY

and ask you to investigate for your own satisfaction. We sell a Top Buggy, nicely trimmed, and of superior finish,—good enough for any body,—at **$55.50** an Open Buggy, neat and strong, at **$33.50** Phaetons, Spring Wagons and Harness at proportionately low figures. **Don't Pay Two Prices** when you can buy the best quality fully guaranteed for **one-half the money.** We want your **regular** trade in our line, and that of your neighbors and friends, and believe that quality, prices, and "Fair and Square" business methods will secure it. Write for our **money saving** catalogue. Address



Fully Warranted. Our Price, $55.50. Compare with Usual Retail Price.

THE MIAMI MANUFACTURING COMPANY, CINCINNATI. OHIO,

A GREAT INDUSTRY.

(*Continued from Page* 252.)

are respectively $1.50, $1.30, and $2.59 per hog higher now than last year. These facts can be seen from the following table, which also shows that hogs on the New England farms are each worth about four dollars more than the average price of the whole country, and from two to three dollars more than hogs are worth in the Middle and Western States. The AMERICAN AGRICULTURIST now gives for this and the preceding years:

THE PRICES FOR DIFFERENT SECTIONS.

(*Per* 100 *Pounds Live Weight.*)

States.	1890.	1892.	1893.
New England.....	$8.94	$8.72	$10.22
Middle.....	6.55	6.84	8.14
Southern.....	3.42	3.40	3.84
Western.....	5.00	4.81	7.40
Pacific.....	4.83	5.30	6.27
Average for U. S.....	$4.72	$4.60	$6.41
In 1860..... $4.55	.....	.....	.....
In 1870..... $7.00	.....	.....	.....

Of course farmers will be sorely tempted to secure the big prices, but if the present gain should result in a subsequent loss, it would seem best not to increase the supply of hogs too largely, but with a more moderate supply to maintain good values for hogs during a longer period of time. It must also be remembered that high prices check consumption.

Prices of Pork and Lard.—In conjunction with the AMERICAN AGRICULTURIST'S review of the hog crop, it is of interest to note the run of prices for mess pork and lard. In 1860, when hogs averaged $4.55, mess pork ranged in Chicago from $10 to $18.50 per barrel, and lard from $7.25 to $12 per 100 pounds. In 1870, mess pork sold from $18 up to $30.50 per barrel, and lard from $11 to $17.25 per 100 pounds, when hogs were worth seven dollars. But the year before, in 1869, pork ranged from $27 to $34, and lard from $16.25 to $20.75, which were the highest prices ever recorded. As hogs became cheaper again, in 1880, pork fell to $9.37½, with lard down to $6.35, and in 1890 pork sold as low as $7.50, with lard only $5.50. The lowest prices ever touched within 30 years were, pork $6.02½ in 1878, and lard $5.30 in 1879. These quotations show the very serious reaction that followed the range of very high prices. Compared with to-day, they are as follows:

ANNUAL RANGE IN PRICES PER 100 POUNDS.

	Pork.	*Lard.*
1860.....	$10.00 @ $18.50	$ 7.25 @ $12.00
1869.....	27.00 @ 34.00	16.25 @ 20.75
1870.....	18.00 @ 30.50	11.00 @ 17.25
1878.....	6.02½ @ 11.35	5.32½ @ 7.80
1879.....	7.27½ @ 13.75	5.30 @ 7.75
1880.....	9 37½ @ 19.00	6.35 @ 7.85
1885.....	8.00 @ 13.25	5.82½ @ 7.10
1890.....	7.50 @ 13.62½	5.50 @ 6.52½
1893.....	17.60 @ 18.62½	12.32½ @ 12.80

Here we see that both pork and lard are now quoted in Chicago at more than double the lowest prices of 1890, while there has been an increase of only 35 per cent. in the average price of hogs during the same period. This is evidence of the results of speculation in food products, and here comes in

The Question of Supply.—It is well to look at the available stocks of pork and lard, for the purpose of seeing whether the supplies on hand at the beginning of this year, in Chicago, were so small as to warrant a price out of all proportion to the advance in hogs. We give them as follows:

	*1885–'89.	1890.	1892.	1893.
Pork, bbls...	127,061	106,000	279,654	100,740
Lard, tcs.. ..	59,776	24,523	60.750	10,675

*Average for five years,

These figures show that stocks of pork in Chi-

[*Continued on Page* 255.]

The Farmer's Friend

Stacks with the Blast of a Fan. ◎ Straw Stacker

NO MAN REQUIRED ON THE STACK, NO DUST, NO TIME LOST IN SETTING AND MOVING.

Manufactured by the following Threshing Machine Manufacturers:—GAAR, SCOTT & CO., Richmond, Ind.; ROBINSON & CO., Richmond, Ind.; M. RUMLEY & CO., La Porte, Ind.; PORT HURON ENGINE & THRESHER CO., Port Huron, Mich.; THE HEILMAN MACHINE WKS., Evansville, Ind.; NICHOLS & SHEPARD CO., Battle Creek, Mich.; RUSSELL & CO., Massillon, O.; PITTS AGRICULT'L WKS., Buffalo, N.Y.; C. AULTMAN & CO., Canton, O.; MINNEAPOLIS THRESHING MACHINE CO., Minneapolis, Minn.; MINNESOTA THRESHER MFG. CO., Stillwater, Minn.; THE JOHN S. DAVIS' SONS, Davenport, Iowa; THE HUBER MFG. CO., Marion, O.; KINGSLAND & DOUGLAS MFG. CO., St. Louis, Mo.; THE HARRISON MACHINE WORKS, Bellville, Ill.; THE ADVANCE THRESHER CO., Battle Creek, Mich.; also by THE INDIANA MFG. CO., Indianapolis, Ind.; KECK, GONNERMAN & CO., Mt. Vernon, Ind.; GEORGE SPALDING, Louisville, Ky. Manufactured under United States and Canadian Letters Patent. All Machines licensed by us will have the trade-mark shown by this advertisement. The user of any machine infringing these patents will be prosecuted.

TRADE-MARK.

Can be Attached to any Separator

No Men are required on this Stack.

Write for free Catalogue and Testimonials. Address,

THE INDIANA MFG. CO.,
INDIANAPOLIS, IND.

UNEQUALED,

Is the verdict of every one who has tried the

U. S. Cream Separator,

and has compared it with other Separators.

It has the largest capacity.
It is the closest skimmer.
It is the easiest and quickest cleaned.
The separating bowl has only 3 parts.
It is *self-oiling,* consequently needs less care and
is superior in every particular.

The cut represents the three Dairy sizes, that separate from 300 to 600 pounds per hour. The factory sizes separate from 1,100 to 2,500 pounds per hour.

The U. S. Butter Extractor is furnished in 5 Sizes.

SEND FOR FULL ILLUSTRATED CIRCULARS.

VERMONT FARM MACHINE CO., Bellows Falls, Vt.

Manufacturers of full lines Dairy and Factory Apparatus.

Better { **Crops** / **Profits** } Are the invariable results of using better means. The **"Planet Jr."** Labor Saving Farm Tools are the best means ever devised for reducing labor, worry, care, and producing better results. They completely solve the scarce help question; they are always ready when wanted; they are never sick, tired, or lazy. It costs nothing to keep them. They are strong, durable, and will last for years. Our New Book for 1893 will tell you what they do and how they do it, with illustrations and prices of each of the twenty machines. We send it *Free.*

S. L. ALLEN & CO., 1107 Market St., PHILADELPHIA, PA.

HOUSEHOLD ARTICLES.

BEST POLISH IN THE WORLD.

RISING SUN STOVE POLISH

DO NOT BE DECEIVED with Pastes, Enamels, and Paints which stain the hands, injure the iron, and burn red. The Rising Sun Stove Polish is Brilliant, Odorless, Durable, and the consumer pays for no tin or glass package with every purchase.

HAS AN ANNUAL SALE OF 3,000 TONS.

It is No Trouble

for us to send you samples of Artistic Wall Paper. One hundred for eight cents. Prices, from five to fifty cents a roll.

A. L. DIAMENT & CO., 1624 Chestnut St., Phila.

THIS $11 TO $17 SEWING MACHINE to examine in any where without a Warranted the BEST made. Our terms and thing far more liberal ever offered. For full advt. out and send to Alvah Mfg. Co., Dept. FREE! home. Sent anycent in advance. sewing machine ever conditions and everythan any other house particulars, cut this us to-day. Address: A34, Chicago, Ill.

PLAYS Dialogues, Speakers, for School Club and Parlor Catalogue free T. DENISON. Publisher, Chicago

"Standard Twill" Silk.

Our Standard Twill Silk is peculiarly well adapted for wear on Gala Days in Athletic affairs—Tennis Tournaments, Canoe or Bicycle Meets, Yachting, etc.

It is printed in a great variety of select designs, and is to be a favorite fabric this year, for Spring and Summer Gowns.

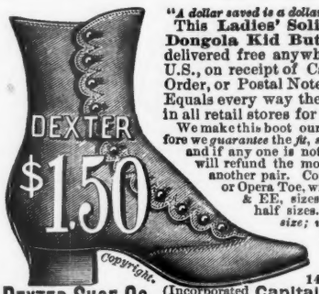
In dark and light colors, there are several hundred patterns, manufactured for no other house.

In ordering samples, state distinctly as possible the style and color preferred, as it will be impracticable to send complete lines of samples in response to each request.

James McCreery & Co.,

Broadway & 11th Street,

New York.



"A dollar saved is a dollar earned." This Ladies' Solid French Dongola Kid Button Boot delivered free anywhere in the U.S., on receipt of Cash, Money Order, or Postal Note, for $1.50. Equals every way the boots sold in all retail stores for $2.50.

We make this boot ourselves, therefore we *guarantee* the *fit, style and wear*, and if any one is not satisfied we will refund the money or send another pair. Common Sense or Opera Toe, widths C, D, E, & EE, sizes 1 to 8, and half sizes. *Send your size; we will fit you.* Illustrated Catalogue FREE

DEXTER SHOE CO. (Incorporated Capital, $1,000,000.) 143 Federal St. Order Dep't, 37 Boston, Mass.

DAIRY GOODS.

We sell everything that goes into the Dairy, Creamery and Cheese Factory. Every Farmer should have our Babcock Milk Tester. More valuable than scales. Send for catalogue.

CORNISH, CURTIS & GREENE M'F'G CO., Ft. Atkinson, Wis.

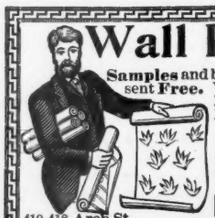
The Improved RELIABLE PUMP.

All working parts now made of brass. There should be one in every house for use in case of Fire. No farmer or gardener should be without one for spraying trees, washing windows, washing buggies, etc. Fruit Growers can save their fruit, such as Cherries, Apples, Peaches, Plums, Currants, or fruit of any kind, where insects will destroy it. Each Pump has two nozzles, one for solid stream and the other for spraying. This pump is the best for the money in the market, is double acting, will throw a stream 50 to 60 feet, horizontally, or 25 to 30 feet high, and is the cheapest pump on the market. Price only $3.50 each. THE GEO. WORTHINGTON CO., 95 and 97 St. Clair St., Cleveland, Ohio.

A PIANO —AND— ORGAN BOOK FREE.

Send us your address on a postal, and you will receive the finest and most elaborate Catalogue of Pianos and Organs ever published. It will show you the latest and best styles, and how to SAVE $100. Satisfaction guaranteed before you pay. Cut this out and mail it to us. You will be more than pleased at the result. ORGANS from $25 up.] if you do it at once. [PIANOS from $175 up. Established 26 Years.

Cornish Organ and Piano Co. WASHINGTON, N. J.



Wall Paper.

Samples and book 'How to Paper' sent Free. White Blanks 3½c. New Golds - - 9c. Embos'd Golds 15c.

Painters and Paper Hangers send business card for our large Sample Books by express.

Kayser & Allman

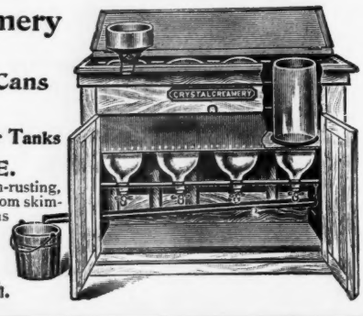
410-418 Arch St., 932-934 Market St., Philadelphia, Penna.

Kneeland's Crystal Creamery

Only Creamery with Glass Milk Cans and Steel Plate Water Tanks

CREAM WITH OR WITHOUT ICE.

Practicable, Durable, Simple, Perfect, **Profitable.** Non-rusting, Non-corrosive, no Leaking. Sediment removed by bottom skimming. No dipping or slopping of milk or cream. Glass cans give more and better cream and butter. A perfect **Separator** for small dairies. Send for catalogues to Agents wanted. Cut prices to first purchaser. Crystal Creamery Co., 42 Concord Street, Lansing, Mich.



PAINT YOUR ROOFS WITH DIXON'S SILICA GRAPHITE PAINT

Water will run from it pure and clean. It covers double the surface of any other paint, and will *last four or five times longer.* Equally useful for any iron work. Send for circulars. JOS. DIXON CRUCIBLE CO., Jersey City, N.J.

MAGIC LANTERNS

And STEREOPTICONS, all prices. Views illustrating every subject for PUBLIC EXHIBITIONS, etc. *A profitable business for a man with a small capital.* Also Lanterns for Home Amusements. 236 page Catalogue *free.*

McALLISTER, Mfg. Optician, 49 Nassau St., N.Y.

CATALOGUE FREE.

A FAIR GOOD BETTER BEST BUGGY FOR $45.00 $55.00 $65.00 $75.00

BUY of the *Manufacturers.* SAVE *Middleman's profit and Traveling man's expenses.* Buggies, Phaetons, Surreys, Wagons and Carts. We are the only manufacturers willing to ship you any vehicle in *Catalogue* to be returned to us, at our expense, if not found as represented.

PIONEER BUGGY CO., Columbus, Ohio.

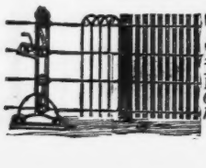
All Vehicles Warranted for two years. Capacity 100 finished vehicles daily.

A CENT SENT BENT.

Manufacturer of "CROWN" PIANOS AND ORGANS.

YOUR curiosity is excited, a cent is spent (for postal), your address is sent, you get catalogue, you learn how best verses win prizes (value $1450), your cent is only lent, you never repent. if you need now, or ever, a Piano or Organ.

GEO. P. BENT, (Clerk No. 26), Chicago, Ill. (Estab. 1870).



THE EMPIRE — STANDARD FENCE — —MACHINE.—

Eight Years of Success. Weaves both farm and lawn fence. Every farmer can build his own fence **better** and **cheaper** than he can buy. 35 to 50c per rod **complete.** One man can build 60 rods a day. Works perfectly over hilly ground and with *any kind* of pickets. Over 12,000 in use. *Wire cheap.* Catalogue free. Address, EMPIRE MACHINE CO., Richmond, Ind.

WALL PAPER 4c. to 50c. a roll. Send 8c. for 100 fine samples. $1.00 will buy handsome paper and border for a large room. THOS. J. MYERS, 1310 Market St., Phila., Pa.

A BEAUTIFUL CRAZY quilt of 500 sq. in., made with pkg. of 60 splendid Silk pes., asstd. bright colors, 25c; 5 packages, $1. Lemarie's Silk Mills, Little Ferry, N. J.

A GREAT INDUSTRY.

(*Continued from Page* 253.)

cago, at the beginning of this year, were only 5,300 barrels less than on January 1, 1890, and, with the exception of 1886, when stocks of both pork and lard were abnormally heavy, the supply on hand this year was very little below that of former years. The stocks of lard on hand at the beginning of 1892 were only exceeded in 1886, and were just about double the average of the January 1st supply from 1888-'90. With the fact before us that the number of hogs throughout the country, at the beginning of this year, was only 10 per cent. less than in 1890, with the stocks of pork the same at Chicago, and with a shortage of only 14,000 tierces of lard, it is difficult to understand why the prices of pork and lard should average 100 per cent. more now than they did then, except that it is the direct result of speculation. When the value of these food products is brought down to its proper level, the speculators will endeavor to make a still greater reduction in the price of hogs, so as to let the farmer be the principal loser.

Our Exports of Pork Products.—Going back a period of ten years, a very good idea of the increase in our export trade of pork products can be learned. The quantity shipped abroad was larger in 1882 than at any subsequent period till 1890, there being a heavy decrease in 1883, then a gradual increase till 1888, which year showed a falling off that was almost recovered in 1889, while the last three years have witnessed by far our heaviest export movement in pork products. Between 1890-'92 there has been but little change in the quantity exported; in fact, there were 12,000,000 pounds less sent abroad in 1892 than in 1890, but the value last year was about $6,000,000 more than in 1890. But in 1882, when the quantity exported was hardly 800,000,000 pounds, its value was $83,000,000, as compared with an export movement nearly 50 per cent. larger in 1890 and 1891, when the value was not $2,000,000, or an increase of two per cent. larger.

QUANTITIES OF PORK PRODUCTS EXPORTED.

(*In Pounds* 000's *Omitted.*)

	1882.	1883.	1887.	1890.	1892.
Bacon ..	428,481	294,119	364,418	531,890	523,459
Hams ..	39,545	46,140	55,505	76,591	82,297
Pork....	80,447	62,110	85,893	80,068	78,193
Lard	250,368	224,718	321,534	471,084	463,916
Tot'ls.	798,851	627,087	827,350	1,159,633	1,147,865
Value...	$82,853	$70,966	$61,660	$85,281	$90,965
Per lb ..	10.4c	11.3c	7.5c	7.3c	8.c
Hogs ...	$5.97	$6.75	$4.48	$4.72	$4.60

Here again it can be seen that the price of pork products is not regulated by the price of hogs. In 1890 the average value of the provisions exported was less than in 1887, yet hogs were higher in 1890. Again, in 1892, when hogs had fallen 12 cents per 100 pounds below the 1890 price, provisions advanced 70 cents per 100 pounds. It is very evident, therefore, that sellers of pork products act upon the principle of squeezing all they can out of the consumers, while not suffering themselves to be squeezed by the farmers. This tendency appears to be more on the increase in recent years.

When to Spray Fruit Trees.—J. S. Woodward, Niagara Co., N. Y., advises the readers of the AMERICAN AGRICULTURIST not to spray any fruit while in blossom, and especially so with blossoming apples. "The codlin moth does not lay the eggs before the petals drop, and the poison does not kill until the eggs hatch and the young larva commences to eat its way into the apple. I think it better to defer the spraying until the latest varieties had dropped their petals. The young apples are then all standing upright and receive the poison directly into the calyx and there are no petals to catch any of it. There is another very important reason why the spraying should not be done while trees are in blossom: The danger that the bees, which are then visiting the trees in swarms, and upon which so much depends in carrying pollen to the blossoms, shall be poisoned. With one pound of pure Paris Green to 250 gallons of water, bountifully applied with a good force pump when the apples are about the size of cherries, I have never found it necessary to make a second application."

Hurrah for the American Agriculturist!—It is good enough without premiums, but so long as you are willing to give such valuable articles for nothing, I am satisfied.

SAM. THURSTON, Tuscola Co., Mich.

Insure Your Potato Crop

For several years past the potato crop has been almost a failure in some sections of New England. The too liberal use of stable manure has produced potato rot and scab to such an extent that the crop has proven unprofitable with many farmers and a total failure with others.

Cold springs, moreover, have caused the vines to be backward in starting, and then to grow up weak and spindling, so that they were readily destroyed by potato bugs, or if they escaped this pest did not have vitality enough to produce a paying crop of good sized potatoes.

Some of the larger growers who have studied into this problem, now insure their crops every year by using BRADLEY'S FERTILIZERS.

READ THEIR EVIDENCE.

FARMINGDALE, L. I., Sept. 12, 1892.

I used three tons of Bradley's Complete Manure for Potatoes and Vegetables this year. My potato crop is the best I ever had. To my great surprise the potatoes were better where I used it alone than where I used manure with it. They were larger, smoother, and very even in size.

J. H. SMITH.

MARSHFIELD, Vt., Nov. 12, 1892.

We have used Bradley's Potato Manure for the last four years and take pleasure in recommending it to potato-growers. Our mode of culture is to mark the rows three feet apart, then scatter in the drill 1,000 lbs. of Bradley's Potato Manure per acre. By this method we have raised 443 bushels of potatoes per acre.

L. W. PITKIN.

FORT FAIRFIELD, Me., Feb. 7, 1893.

It gives me pleasure to state that I have used Bradley's Fertilizers for the past ten years and have had excellent results with them. On potatoes in 1889, I received of the Minister Potato 539 bushels per acre; on Queens Potato, 418 bushels per acre. In 1890, I received of the Minister Potato 580 bushels per acre. I heartily recommend Bradley's Fertilizers to all growers as being the best.

Truly yours, E. W. HOUGHTON.

BURLINGTON, Mass., July 24, 1892.

I have grown with Bradley's Super-Phosphate alone upward of 250 bushels per acre of fine quality potatoes, the latter of which is proven by the fact that I was awarded first premium on them at our agricultural fair.

I claim that potatoes can be grown on Bradley's Fertilizer at much less labor and expense than on stable manure, and besides of far better quality. GEO. H. REED.

FLATLANDS, L. I., Oct. 6, 1892.

Have used this season Bradley's Complete Manure for Potatoes and Vegetables with satisfactory results. On the first twenty acres of potatoes planted I used 1,200 lbs. per acre in the drill, without any other manure, and the result was an average of 325 bushels of fine marketable potatoes per acre. WILLIAM BRENNAN.

QUEENS, L. I., Sept. 23, 1892.

I have used Bradley's Complete Manure for Potatoes and Vegetables on various crops that I raise, for the last six years, with most gratifying results. I plant seven bushels of cut seed to the acre, and apply 1,400 lbs. of Bradley's Complete Manure for Potatoes and Vegetables per acre. I marketed from this crop 350 bushels per acre of very fine stock, it being large, smooth, and very even in size.

CHARLES HUMMELL.

☞ **We manufacture fertilizers of ALL GRADES and FOR ALL crops; and, being the LARGEST MANUFACTURERS IN THE WORLD our facilities for furnishing all kinds of fertilizers and agricultural chemicals at the lowest prices are absolutely unequalled.**

SEE OUR AGENTS OR WRITE US BEFORE PURCHASING....

Bradley Fertilizer Co.

92 STATE STREET, BOSTON, MASS.

SPRAY YOUR TREES. $1.7 Spray Pump EXPRESS PAID, FOR $5.50

MAKES 3 COMPLETE BRASS MACHINES. WILL SPRAY 10 ACRES PER DAY.

AUTOMATIC MIXER for '93. *Best, Cheapest, and Easiest working Spray Pump made.* Endorsed by the leading Entomologists of the U. S. *A Valuable Ill'd Book (worth $5.00), "Our Insect Foes," given to each purchaser.* SATISFACTION GUARANTEED OR MONEY REFUNDED. Over 60,000 in use. *One Farmer agent has sold over* 2000. Insecticides at wholesale prices. Ill'd cat. on spraying free. *Mention paper.* P. C. LEWIS MF'G CO., Catskill, N. Y.

TOPICS OF THE TIMES.

New Jersey State Board of Agriculture.—At the twentieth annual meeting of the New Jersey State Board of Agriculture, F. B. Lee related the history and progress of the Hirsch Hebrew colony at Woodbine, N. J. The progress made was a revelation. Around the rural village are farms of thirty acres each, and the marshy grounds are used for pasturage. Work is given to worthy immigrants, and houses and land sold to them on long credit; 650 acres of arable land has been improved during the year and twelve miles of road built. The streets are wide and are bordered with poplars and maples. A beautiful park has also been started. Each of the farmers has planted 250 fruit trees, and one acre of grapes and small fruits. The growing of early vegetables has been found as successful in Southern New Jersey as at Norfolk. The immigrants are very enthusiastic, and are fast becoming Americanized. These Hebrews have proved to be excellent farmers, notwithstanding that their race has long been a nation of traders. E. B. Voorhees, of the New Jersey ftation, stated that the small home dairy can be managed with more skill than the large one, and urged the selling of milk, according to quality rather than volume. Byron D. Halsted, State Botanist, delivered an illustrated lecture on the Pollination of Plants, and showed practical results of the artificial process. J. B. Smith illustrated the Injurious Insects of the year recommending especially that the undergrowth around cranberry bogs be burned to destroy these enemies. The State Road Convention met at the same time and reported on the new road law which gives State aid to counties building such permanent stone roads as meet the approval of the Governor and the President of the State Board of Agriculture. Several counties have built and repaired roads under these conditions, and the law is a success. The President, Edward Burrough, of Camden, is a practical, wide-awake farmer, and has been reëlected to the office every year since 1886. He is the Superintendent of the New Jersey Agricultural and Horticultural Exhibit at the World's Fair. Secretary Franklin Dye, of Trenton, was born and reared on a New Jersey farm, and through forty years of practical work, has obtained a knowledge of the needs of his office, the duties of which he has efficiently discharged for five years.

Cattle Transportation Restricted.—The annual proclamation has been issued by the United States Department of Agriculture defining the limits within which Splemetic or Southern fever exists, as shown in the accompanying map, the infected region being south of the boundary indicated. Cattle from this region must be shipped in cars or

MAP OF TEXAS FEVER TERRITORY.

yarded separately from other cattle, and the cars must be cleaned and disinfected before being used for cattle again. It is believed that this system will enable cattle from the South to be marketed without spreading this disease among others.

The United States Department of Agriculture has also issued regulations under which Canadian cattle may be admitted for exhibition at the Columbian Exposition, without regard to the ninety-day quarantine against Canadian cattle instituted on February 3d, and still in force.

The Illinois State Dairyman's Association met in nineteenth annual session at Sycamore with a large attendance. The old officers were mostly reëlected, including Lovejoy Johnson as President, and W. R. Hostetter, Mount Carroll, as Secretary. Further legislation relative to adulterated dairy products are demanded, more especially provision for a dairy commission to enforce existing inspection laws. The essays were all good, and the discussions of a high order of practical merit. Prof. E. H. Farrington of the University of Illinois made one of the clearest expositions we have seen of the point that quantity of milk can be increased or decreased, without necessarily lowering or raising the quality. Mr. B. T. Weyman's paper set forth the claims of the properly constructed dirt road, which he believed was better than macadam for nine months of the year. He cautioned farmers against favoring the expensive methods in road construction now being advocated. The Association voted that the United States Department of Agriculture be equipped with a road engineering branch, on the lines recommended by the AMERICAN AGRICULTURIST.

Cruelty to Animals at Sea was greatly reduced by the inspection system inaugurated by Secretary Rusk, but the abuse is still far from being done away with. Mr. W. H. Ballou, of New York City, who has made quite a study of this matter, claims that on the average $10,000,000 worth of animals are annually destroyed at sea, that no government has jurisdiction, and that an international conference is needed to formulate methods for preventing this cruelty and loss. It is a matter of large financial importance, as well as of great concern on humanitarian grounds, and Mr Ballou's suggestion is worthy of earnest consideration. It would be very proper for the United States to take the initiative in calling such a conference, as she constitutes such a large proportion of the live stock shipments carried on the high seas. Mr. Rusk's work, alone, largely reduced the insurance rates on cattle in ocean transit, and this proposed concert of action by all the nations interested would still further mitigate the risks of the cattle export trade besides bringing about the proper treatment of our dumb beasts.

Our Review of the Hog Industry, both in regard to the live stock and to pork products, is one that has never hitherto been placed so clearly, or so extendedly, before farmers. The subject is discussed from a variety of standpoints, each of which affords material for careful study on the part of the farmer, who will now be in a better position to understand the advisability or otherwise, of largely extending his hog crop, besides being thoroughly informed of the progress of the industry during the past twenty-five years.

Getting Down to the Farmers.—The Department of Agriculture of the Ohio State University has made a specialty the past season of lectures by practical farmers, in addition to the course furnished by the professors. These are largely attended by farmers as well as by the students. The University of Nebraska has also joined in the movement for a short course in agriculture, which has proven very popular the past winter. The curriculum or list of lectures was very attractive, differing from similar work in other colleges by consisting of four lectures daily for two weeks. This enables many to attend who could not afford a longer absence from the farm, but farmers must take copious notes in order to retain and digest all the knowledge presented in so short a time. Both these instances emphasize the general desire of our agricultural colleges to "get down to the farmer," or enable him to extract some immediate benefit from this work

Competent Judges are greatly needed in the agricultural divisions of the World's Fair. The judges are to begin work about June 1st, and will be occupied two months, for which they will be paid $600, unless technicalities pertaining to the appropriation prevent. It is desired to secure for these positions only men and women of national reputation for ability in their specialty. Applications or recommendations should be made to Mr. John B. Thacher, chairman executive committee on awards, Chicago.

The Sugar Industry will not make as much headway this season as was hoped, because capital is afraid to invest in new factories, either for cane or beet sugar, until the attitude of the party in power is defined. The State of Washington has set a good example by legalizing a State bounty of two cents per pound (up to $50,000 a year) on sugar made from beets grown within the State whenever no Federal bounty is paid. This should insure the erection of at least one sugar factory in that enterprising State.

The sugar beet campaign of 1892 is closed with a product of 27,083,322 pounds of sugar, against 12,004,838 pounds the previous year, an increase of 15,078,484 pounds. Utah's production was 1,471,000, an increase of about 400,000 pounds; California, nearly 22,000,000 pounds, a gain of 14,000,000; while Nebraska's crop was 3,808,500 pounds, or more than a million pounds gain over 1891. The details of the past campaign are thus given by Willett & Gray:

Norfolk (Neb.) Beet Sugar Co., closed November 9, 1892.....1,698,400 pounds
Oxnard Beet Sugar Co., closed November 19, 1892, Grand Island, Neb.....2,110,100 pounds
Utah Beet Sugar Co., closed November 9, 1892, Lehi, Utah.....1,473,500 pounds
Chino Valley Beet Sugar Co., closed October 28, 1892, Chino, Cal.....7,903,541 pounds
Alameda Beet Sugar Co., closed December 8, 1892, Alvarado, Cal.....2,506,860 pounds
Western Beet Sugar Co., closed January 27, 1893, Watsonville, Cal.....11,390,921 pounds

A Literary Club, with coöperative features, is an outgrowth of the well known magazine club. Let any number of families unite in a simple club without the formality of by-laws, but with a presiding officer and a secretary. The latter should subscribe for all the monthlies desired, and buy all books wanted, thus getting them at the best prices and saving members the trouble. Arrange the list of periodicals and books so as to avoid duplicates, have them mailed direct to the person who specially prefers them, and then arrange a system of exchange between the members. Thus each family may own the magazines or books it likes best, while enjoying those bought by their neighbors. An occasional meeting to discuss the topics considered in the literature thus secured can be made very interesting, the more so if a systematic course of reading or inquiry is followed. Here is a fine chance to unite the best features of the Chautauqua reading circle and the magazine club. No town is without sufficient intelligent families to act on this hint, and the work of such an informal organization would have a wide influence in developing literary culture among the local public.

Home; or —— ?

This is just now a seasonable and a serious question for many. The "cold" of the autumn has developed into disease. Business or society—the winter's confinement, or its weather, has made them weak and depressed. The family physician looks grave, and finally says a change of air is "the only thing." Where shall it be? The Seashore, the Mountains, the South, all have their features, but Home, sweet home, has comforts of its own—not to be found in the world elsewhere.

Exile in health is bad enough, but exile in sickness who can fully describe? Then the matter of great expense often makes, for many, the full cup of trouble to overflow.

To any such, reluctant to go away, we would say, investigate what science and skill can do for you right where you are. The Home Treatment of Drs. Starkey and Palen will give you a change of air in your own room. Their Compound Oxygen is richest air, charged with magnetism, full of ozone—life for the lungs, blood and nerves; not a drug to tax the weak system.

The supply will last from two to three months. It carries with it the advice of expert physicians for that period without extra charge. For twenty-three years, and in ever-widening circles, this has restored sick and run-down people at their own homes.

Before you go away, remember that if a change of air will benefit you, it can be had where you are; if relief and ease is only possible, you can get it at home, where it will be relief indeed.

Write for particulars to Drs. STARKEY & PALEN, 1529 Arch St., Philadelphia, or Chicago, San Francisco, New York, and Toronto, Ont.—[*Adv.*

The Proper Use of Germicides.

The value of disinfectants and antiseptics has long been known in domestic economy and in the care and preservation of our health. But their use, as taught by sanitary science, has been confined to the more intelligent or the wealthy, and even by them but seldom extended to the farm and live stock, because of their cost, difficulty of obtaining them, and ignorance as to the method of using. Every one knows that, theoretically, the stables and barn cellar should be kept sweet and clean, but, practically, this has been almost impossible heretofore. Now, however, a new, efficient and very cheap disinfectant and antiseptic has been introduced that is within the reach of all, and that can be properly used by an ordinary farm hand. In the first place, the barn should be thoroughly cleaned out, and refuse matter of all kinds entirely removed from the cellar as well as from the barn proper. The liberal use of whitewash should be recommended in the cellar and upon the pine floor of the barn. A teaspoonful of this new substance, Kresin, to each quart or two of water in making the whitewash, is desirable.

Newly bought cattle as well as the cattle already in the stable, should be washed with a solution, containing a tablespoonful of Kresin to three quarts of water. The sinks, troughs and stalls of the animals should be continually disinfected with the same solution. Where any eruption has appeared upon animals, they should be washed thoroughly with this solution. A liberal use of Kresin during the season when flies and insects annoy the cattle, will be well worth all the time and expense it costs. Against ulcers, cancer or injury of the hoof, thrush of the frogs, corns, sandracks and fissures, inflammations of the knee, founder, saddle or harness sores in horses, daily washing and painting with a solution of Kresin—a tablespoonful to a quart of water—is to be recommended. In mouth and hoof disease, ring worm, scratches, mud fever, Kresin is commended by Dr. W. Thornton Parker as the best application. These solutions should be made with warm or hot water, since by this method they are more efficacious. In sponging down the legs of horses, after they have come in from a drive, it is well to add a tablespoonful to two quarts of water. Kresin should always be used in solution and never undiluted. This is one point in its favor—that it is is so strong a little of it goes a great ways—thus the expense is small.

Much of the soap used in the stable is foul and irritating. The old idea now happily exploded, that any soap is good enough for the stable, should not be tolerated. Kresin soap, which is a valuable disinfectant, deodoriser and antiseptic, should always be used in the stable, when soap is required. At least once a week the udders of cows should be washed with a solution of Kresin, one tablespoonful to three quarts of water. Dr. Parker also says that, a week after its birth, the calf ought to be washed with the same solution and the external genitals, thighs and legs of the mothers repay the same attention. For those who are obliged to be round and about cattle, the use of Kresin soap will tend to destroy the odors and act as powerful antiseptic.

In the care of the outbuildings of the farm, particularly the hen houses and the hog pens, Kresin may be liberally used to advantage. The hen roosts and nests should receive a stronger solution. Dip each fowl in a solution, containing one tablespoonful Kresin to a quart of water, as a preventive against lice. For the care of dogs, Kresin is especially useful as a preventive against mange, scab, itch and eczema. A bath, containing one tablespoonful in each quart of water, will be found of great benefit in the care of dogs.

Kresin is a brown liquid containing 25 per cent. of cresol, the strong antiseptic and germicide, and, as a means for dissolving it, an equal amount of Sodium Cresoxylacetate is added, a substance which has the same properties. Kresin is of more energetic and reliable action, less poisonous and less caustic than carbolic acid. It is a German discovery, indorsed by the highest authorities abroad, and the AMERICAN AGRICULTURIST believes it will be found to be a most convenient and valuable disinfectant for veterinary, agricultural and domestic purposes. Kresin destroys the germs of contagious diseases, and is a most powerful deodorizer. It destroys dry rot, fungi and mold in and about buildings, and is a protection generally, as well as a preservative.

A Chatham Miracle.

Dr. Carl Verrinder's Vicissitudes of Torture and of Health.

HE SURVIVES THEM ALL, AND RECOUNTS HIS WONDERFUL DELIVERANCE FROM POVERTY AND DEATH, AND HIS RESTORATION TO PROSPERITY AND VIGOR OF MIND AND BODY—GOOD WORDS FOR THE A. O. U. W.

(*Chatham Planet.*)

In a Raleigh street residence there lives with wife and one child—a little ten-year-old daughter—a musician known throughout Ontario, if not the whole Dominion, as a prince among pianists, organists and choir masters—a veritable *maestro* and "Wizard of the Ivory Keys," and no one who has ever listened to his manipulation of the great organ in the Park Street Methodist Church, or heard him evoke "magic music's mystic melody" from the magnificent Decker Grand in his own drawing room, but will declare that his eminence is well deserved, and his peers can be but few among the professors of Divine Art. The door plate bears the following inscription:—

CONSERVATORY OF MUSIC.

DR. CARL LEO VERRINDER,

Director.

To sit, as did a *Planet* reporter a few days ago, in a very atmosphere of sweet harmony, created by Dr. Verrinder's magician-like touch, was an experience that might well be envied, and one calculated to inspire the most sentimental reveries. But sentimental moods finally vanish and leave one facing the sober and practical side of life. The music ceased and the conversation took a turn leading to the real object of the reporter's call.

"There are stories abroad," said the newspaper man, "regarding some extraordinary deliverance from death, which you have met with recently, doctor. Would you object to stating what foundation there is for them, and, if any, furnish me with the true facts for publication." Dr. Verrinder shrugged his shoulders and laughed. "I have not," he replied, "been given to seeking newspaper notoriety, and at fifty-five years of age it is not likely I shall begin, and yet," said the professor after thinking a moment and consulting Mrs. Verrinder, "perhaps it is best that I should give you the circumstances for use in *The Planet*. The story of my rescue from the grave might fittingly be prefaced by a little of my early history. We resided in England, where, though I was a professor of music, I was not dependant on my art, as I had acquired a competence. My wife was an heiress, having £50,000 in her own right. Through the rascality of a broker she was robbed almost of all her fortune, while by the Bank of Glasgow failure, my money vanished forever. It became necessary for me then to return to my profession in order to live. I do not speak of it boastingly, but I stood well among the musicians of that day in the old land. My fees were a guinea a lesson, and it was no uncommon thing for me to give twenty in a day. We came to America, landing in Quebec, where I anticipated getting an engagement as organist in the cathedral, but was disappointed. Subsequently we moved to St. Catharines, in which city I procured an organ and choir and soon had a large *clientele*. Later, in order as I thought to better my fortune, I took up my residence in London, first filling an engagement with a Methodist church and afterwards accepting the position of organist in St. Peter's Cathedral. In those cities I made many warm friends, and their tributes and gifts I shall ever retain as among the most precious of my possessions. It was while living in London and pursuing my art with much earnestness and labor that I received a stroke of paralysis. Perhaps,"—here the speaker rose, and stretching himself to his full height, thus displaying his well-built and well-norished frame—"I do not look like a paralytic. But the truth is I have had three strokes—yes, sir, first, second and third, and they say the third is fatal, ninety-nine times out of one hundred. Yet here you see before you a three-stroke victim, and a man who feels, both in body and mind, as vigorous as he ever did in his life. My ultimate cure I attribute to my testing the virtues of a medicine whose praise I shall never cease sounding as long as I live, and which I shall recommend, to suffering humanity as I am now constantly doing, while I know of a case and can reach the ear of the patient. After removing to Chatham I had not long been here when my health further began to give way. Gradually I noted the change. I felt it first and most strongly in a stomach affection which produced constant and disressing nausea. It grew worse and worse, I myself attributed it to bad water poisoning my system. One doctor said it was catarrh of the stomach. Another pronounced it diabetes, still another a different diagnosis. I kept on doctoring, but getting no relief. I tried one medicine after another, but it was no use. Grippe attacked me and added to my pain, discomfort and weakness. At last I took to my bed and it seemed that I was never going to get well. Nothing of a nourishing nature would remain on my stomach. No drugs seemed to have a counter-acting influence on the disease which was dragging me down to death. My wife would sit at my bedside and moisten my lips with diluted spirits which was all that could be done to relieve me. Besides three local doctors who gave me up, I had doctors from London and Kingston whose skill I believed in and to whom I paid heavy fees, but without receiving any help or encouragement. It is true that a stomach pump operation afforded temporary relief, but yet I felt that my peculiar case needed some special and particular compound or remedial agent which I knew not of. But, at last, thank God, I discovered it. I had been for eighteen months a miserable wreck, unable to work, unable to eat or sleep properly. My means were becoming exhausted. My poor wife was worn out in body and spirit. Suddenly the deliverer came! Pink Pills! Yes sir! Pink Pills—God bless their inventor or discoverer!—have rescued me from the jaws of death and miraculously made me what you see me to-day hearty, happy, with a splendid appetite, a clear brain, a capacity for work and an ability to sleep sound and refreshing sleep—a boon that only a man who has experienced the terrors of insomnia can rightly appreciate. Bear in mind, my friend, I am no wild enthusiast over the supposed merits of this medicine. I have tested the virtues of Pink Pills and am ready to take oath to their efficacy. No one could shake my faith in them; because what a man has thoroughly proved in his own experience, and what he has had confirmed in the experience of others—I have prescribed the pills to other sick persons and know what extraordinary good they have effected in their cases—he ought to be convinced is so. I shall tell you how I came to try them. A fellow member of the A. O. U. W., the brethren of which order had been more than kind to me during my illness, recommended Pink Pills. I knew nothing about what they were or what they could accomplish. In fact, I am rather a sceptic on what are termed "proprietary remedies." But I started to take Pink Pills for Pale People, made by the Dr. Williams' Medicine Co., Brockville. From the very first, one at a dose, I began to mend, and before I had taken more than a box or two I knew that I had found the right remedy and that to the Pink Pills I owed my life. In nine months I have taken twelve boxes—just six dollars worth. Think of it my friend! Hundreds of dollars for other treatment, and only six dollars for what has made a man of me and set me again on the highway of health and prosperity. There is some subtle, life-giving principle in Pink Pills which I do not attempt to fathom. I only knew, like the blind man of old: "Once I was blind; now I can see!" God, in the mystery of his providence, directed my brother of the A. O. U. W. to me. I took it. I live and rejoice in my health and strength. I have no physical malady, save a slight stiffness in my leg due to grippe. I feel as well as in my palmiest days. My prospects are good. All this I gratefully attribute to the virtues of Pink Pills for Pale People, "and now my story is done!" as the nursery ballad runs. If anybody should ask confirmation of this tale of mine let him write to me and I shall cheerfully furnish it. The Pink Pills were my rescuer and I'll be their friend and advocate while I live!"

The reporter finally took his leave of Dr. Verrinder, but not without the professor entertaining him to another piano treat, a symphony played with faultless execution and soulful interpretation of the composer's thought.

Calling upon Messrs. A. E. Pilkey & Co., the well-

known druggists, the reporter ascertained Dr. Williams' Pink Pills have an enormous sale in Chatham, and that from all quarters come glowing reports of the excellent results following their use. In fact Dr. Williams' Pink Pills are recognized as one of the greatest modern medines—a perfect blood builder and nerve restorer—curing such diseases as rheumatism, neuralgia, partial paralysis, locomotor ataxia, St. Vitus' dance, nervous headache, nervous prostration and the tired feeling resulting therefrom, diseases depending upon humors in the blood, such as scrofula, chronic erysipelas, etc. Pink Pills restore pale and sallow complexions to the glow of health, and are a specific for all the troubles peculiar to the female sex, while in the case of men they effect a radical cure in all cases arising from mental worry, overwork or excesses of whatever nature.

These Pills are manufactured by the Dr. Williams' Medicine Company, Schenectady, N. Y., and Brockville, Ont., and are sold in boxes (never in loose form by the dozen or hundred and the public are cautioned against numerous imitations sold in this shape) at 50 cents a box, or six boxes for $2.50, and may be had of all druggists or direct by mail from Dr. Williams' Medicine Company from either address. The price at which these pills are sold make a course of treatement comparatively inexpensive as compared with other remedies or medical treatment.

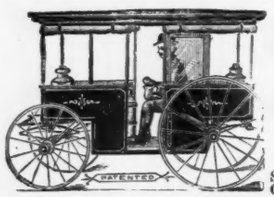
A "LOW DOWN" MILK WAGON

—IS A—

Great Boon

—FOR—

HARD-WORKED MILKMEN.



Send for Descriptive Catalogue to

Parsons "LOW DOWN" Wagon Co., Earlville N. Y.

HEEBNER'S Patent LEVEL-TREAD **HORSE-POWER**

With SPEED REGULATOR. For 1, 2 and 3 Horses.

LITTLE GIANT Threshing Machine.

Threshes Grain, Rice, Flax, Millet and Grass Seed. Fully Warranted. Feed and Ensilage Cutters, Feed Grinders, &c

HEEBNER & SONS, Lansdale, Pa., U. S. A.

HAWKEYE GRUB AND STUMP MACHINE.

Makes a clean sweep of **two Acres at a sitting.** A man, a boy and a horse can operate it. No **heavy Chains** or rods to handle. The crop on a few acres the first year will pay for the Machine. Send postal card for illustrated Catalogue, giving price, terms, testimonials, also full information concerning our **IXL Grubber.** Address Manuf'rs,

JAMES MILNE & SON, SCOTCH GROVE, IOWA.

LATEST IMPROVED

HORSE POWER

Machines for **THRESHING & CLEANING Grain,** also **Machines** for **SAWING WOOD** with **Circular** and **Cross-Cut Drag Saws.**

Acknowledged by all to be

THE BEST

regarding

EASY DRAFT, DURABILITY & QUANTITY of WORK.

50 page pamphlet Free. Address **A. W. GRAY'S SONS,**

PATENTEES AND SOLE MANUFACTURERS,

P. O. Box No. 8, **MIDDLETOWN SPRINGS, VT.**

ROBERT C. REEVES Co., General Agents for N. Y. City and vicinity, **185 and 187, Water Street, New York.**

ALLIANCE CARRIAGE CO., CINCINNATI, OHIO.

You should order no **BUGGIES, CARRIAGES, WAGONS** or **HARNESS** from any one until you have seen our New Grand Catalogue for 1893, which is mailed free to any address. It shows over one hundred new styles, with prices of vehicles ranging from $30 upward, and Harness from $5 upward. Our goods are strictly hand-made and fully warranted for two years, and our Spiral Springs are warranted for 12 years. We are recognized manufacturers for the above organizations. Examine our mammoth display at the World's Fair, in Chicago. The only manufacturers in the world that sell their entire output direct to the consumer.

ALLIANCE CARRIAGE CO. Factory and Salesrooms: Sycamore St. from Court to Canal Sts. **Cincinnati, O.**

THE DAVIS SWING Churn

For Power or Hand. Greatest Concussion. Churns most thoroughly. Churns easiest.

Far Superior in Quality of Butter and Ease of Operation.

I have sold several of your Davis Swing Churns, and all are perfectly satisfied with the results attained, and consider them far superior to all other churns used by them, both in regard to quality of butter and ease of working. ALBERT STEINER.

SALEM, N. J., August 2, 1892.

We Cannot Sell Any Other Patent Churn.

Since we have been handling your Davis Swing Churns we cannot sell any other patent churn made, and every one we sell gives the best of satisfaction. We consider it the best churn, and can and will recommend the same very highly. D. ABRAHAM.

MONTGOMERY, Ala., July 28, 1892.

Butter Workers, Butter Printers, Butter Carriers, and a full line of Dairy and Creamery Apparatus. Send for illustrated circulars free to all.

VERMONT FARM MACHINE CO., Bellows Falls, Vt.

The **"WONDER ON WHEELS."** NO POLE.

SOLID COMFORT SELF GUIDING. TONGUELESS.

Two Horses instead of Three.

Wood or Steel Beam.

A 10-year old boy instead of a plowman. Uses a wheel landside. No side draft. No neck weight. No lifting at corners. Brake prevents plow running on team.

Easier Driving, Straighter Furrows, and **Lighter Draft** than any plow on or off wheels. Equally adapted to Western prairies and hard, stony ground, or hillsides.

Our book—**"Fun on the Farm,"** sent *Free* to all who mention this paper.

ECONOMIST PLOW CO., South Bend, Indiana.

Special prices and time for trial given on first orders from points where we have no Agents

ROBINSON WOOD & METAL PICKET FENCE MACHINE

Has ***Perfect, Independent Spring Tension*** for ***each*** wire. Twister Wheel will ***not*** injure ***zinc coating*** of wires. Weaves over ***splices*** in wires with ***ease.*** ***NO OIL*** required on the wires.

AGENTS WANTED

Cheapest and Best.

For Prices and free Catalogue address

SAFETY GATE CO., Box G, **RICHMOND, IND.**

NOTE AND COMMENT.

The Increase of the Non-Farmer.

The United States seems to be changing from an almost purely farming country to what promises to be a prosperous land of many other thriving industries. The last census showed that there are 3,715 cities, towns and villages which have upwards of 1,000 inhabitants each, or a total of 26,142,025 urban population as defined by John C. Rose in the *Popular Science Monthly*. The other 36,480,225 people are considered rural population. During the last ten years the city or urban population increased nearly one-half, while the country or rural population increased only one-eighth. Nearly 3,000,000 of the entire 4,000,000 of increase in rural population was in the States west of the Mississippi river. It is possible to travel from the Bay of Fundy to the southern bend of the Tennessee river, and, in the 1,500 miles, not pass through a single county in which the rural population is not less than it was 10 years ago; or to go all the way from Boston to western Iowa, through counties with less population than they had in 1880.

Before canals or railroads existed, the proximity of most of the New England towns to the sea coast gave them a great advantage, but now it costs less to carry a barrel of flour from the Dakotas to Boston, than it does to wagon it a hundred miles. Were the decrease of rural population confined only to New England and to such portions of the other older States as have a poorer soil, the cause would be obvious, but the decrease is going on over extensive areas of the most productive portions of the country. In fertile New York, where the variety of agricultural and pastoral productions surpasses even California, the decrease has been as general as in sterile New England. From the time a traveler down the Mississippi river leaves St. Paul until he reaches a point more than 50 miles south of St. Louis, he will pass many counties which shows a decrease, but none which show an increase in rural population. This tract of 81,020 square miles extends over portions of Minnesota, Iowa, Missouri, Illinois and Wisconsin, with a decrease of nearly seven per cent. or only one-fifth less than in New York. The counties in the immediate vicinity of Chicago, which have, strangely enough, gained in rural population, separate this large tract from another decreasing area of 18,373 square miles near Lake Erie, with nearly six per cent of loss.

The better adapted for farming a region east of the Missouri river may be, the greater is the probability that it lost in rural population during the last decade. In some of the districts in which the loss is marked, hay and rye are the staple crops, in others wheat, in others maize, and in others tobacco. Neither fertility nor climate seem to be the cause. In prohibition Iowa 43 out of 99 counties have a diminished rural population, and in Illinois, in which prohibition does not exist, the same fate has overtaken 60 out of its 102 counties, a still larger proportion, and Illinois is the principal farming State in the Union. Only in the Dakotas, Idaho, Arizona and Louisiana is there an increased percentage of farmers. In the three Pacific States as a whole, very nearly one-half of the entire population reside in cities, the urban population numbering 901,644, as against a rural population of 969,643.

The ratio of urban to rural population is increasing rapidly over almost all the civilized world. The conditions of life in California suggest resemblances to those existing in the Australian colonies, which, though much less densely populated, have a larger proportion of the total population residing in cities of 8,000 or more inhabitants, than is the case in the United States. In many foreign countries, large areas have recently experienced an absolute loss of rural inhabitants. In England the cities increased 15 per cent., the country only four per cent. There is an actual decrease in nine out of the 12 counties of Wales, in 16 out of 33 counties of Scotland, in 30 out of the 32 counties of Ireland. In France, the increase of total population for five years was but 124,289, while the gain in the population of the 56 cities of over 30,000 inhabitants was 340,396. Outside of these cities there was an actual decrease of 216.107. In Germany two-thirds of the total increase of population between 1885 and 1890 was in the 150 cities having over 20,000 inhabitants each, though these places contain only one-fifth of the entire population of the empire.

The ever-increasing competition of factory-made goods with the products of rural handicrafts, is one cause of the decreasing population of rural communities. Fewer and fewer country tailors, shoemakers, blacksmiths, carpenters and other artisans can earn their living in competition with the machine-made goods which the steadily decreasing cost of railroad transportation enables the great factories in cities to sell to rural customers. The tradesworkers are forced to seek employment in the cities. The social and intellectual attractions of city life, and the greater physical conveniences, are powerful factors in building up cities, which supply the most economical labor to the factories. None of the causes seem to have been set in motion by legislation, and the decrease of rural population could not be perceptibly

(*Continued on Page* 264.)

When Purchasing an Organ

A glance at the advertisements in any musical publication will reveal many organs of different makes, each of which "has no equal."

Such claims are of little value. The praises of these instruments should be sung by the public. It is they who are purchasing, and they alone must choose.

If there is any organ which has the right to make such a boast, it is the organ which has proved its unequalled merits by its unequalled sales.

And that organ is the ESTEY Organ.

WRITE FOR CATALOGUE.

ESTEY ORGAN CO.

Brattleboro, Vt.

BRANCH OFFICES:

159 Tremont St., Boston; State and Jackson Sts., Chicago; 831 Broadway, New York; 916 Olive St., St. Louis; 18 North 7th St., Philadelphia; Marietta and Broad Sts., Atlanta, Ga.

Said the Owl

to himself, "If the moon I could get, whenever I'm dry my throat I could wet; The moon is a quarter—with a quarter I hear; you can purchase five gallons of

Hires' Root Beer."

A Delicious, Temperance, Thirst-quenching, Health-Giving Drink. Good for any time of year.

A 25c. package makes 5 gallons. Be sure and get HIRES'.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

Beware of Imitations. NOTICE AUTOGRAPH OF Stewart Hartshorn ON LABEL AND GET THE GENUINE HARTSHORN

Garfield Tea Overcomes results of bad eating, Cures Sick Headache, Restores Complexion, Saves Doctors' Bills. Sample free. GARFIELD TEA CO., 319 W. 45th St., N.Y.

Cures Constipation

ROOT'S REPAIRING OUTFIT,

Consisting of iron Lasts and other tools and materials, enables one to do his own HALF-SOLING and BOOT, SHOE, and RUBBER repairing. Any boy can use it. Thousands now in use. Weight, 20 lbs. Price, only $2.00. Good HALF-SOLES, 10, 12, 15c. a pair; 2, 3, 5 cts. extra, sent by mail. STRAPS for either making or mending YOUR OWN HARNESS, any length or width, blacked and creased, half usual prices. HAMESTRAPS, complete, 8c. each; doz., 75c. Other goods in proportion, safely and cheaply by mail. Root's HOME IRON-WORKER, a complete, practical, and first-class KIT OF BLACKSMITH TOOLS. Root's GEM SOLDERING CASKET, 65c.; mail, 75c. Agents wanted. Catalogue free.

MEDINA, OHIO. ROOT BROS., MEDINA, O

$1.50 AMERICAN WATCH

$1.50 will now buy a reliable AMERICAN WATCH in strong GOLD PLATED Dust Proof Case. Will not vary a minute in 30 days; Is as durable as any watch made. FULLY GUARANTEED. (Publishers of this paper will tell you we are reliable.) It has AMERICAN patent lever MOVEMENT, Patent Escapement and Regulator, Lantern Pinion, 240 beats to minute; No key required to wind and set; weight 4 oz.; exactly like cut; Post-paid for $1.50, 3 for $4.00, 12 for $15.00, by express. Mention paper and we will include handsome gold plated CHAIN & CHARM. AGENTS & Storekeepers send for TERMS. Catalogue of 1000 new articles FREE.

ROBERT H. INGERSOLL & BRO., 65 CORTLANDT ST., NEW YORK CITY.

Unlike the Dutch Process

No Alkalies —OR— Other Chemicals

are used in the preparation of

W. BAKER & CO.'S

Breakfast Cocoa

which is absolutely pure and soluble.

It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is far more economical, *costing less than one cent a cup.* It is delicious, nourishing, and EASILY DIGESTED.

Sold by Grocers everywhere.

W. BAKER & CO., Dorchester, Mass.

AGENTS $50 to $100 A WEEK. Ladies or Gents. Best seller known. Needed at every house, place of business or farm the year round. "Home" Electric Motor runs all kinds of light machinery. Cheapest power on earth. Connected instantly to wash or sewing machine, corn sheller, pumps, fans, lathes, jewelers' or dentists' machinery, &c. Clean, Noiseless, lasts a life-time. No experience needed. To show in operation means a sale. Guaranteed. Profits immense. Circulars free.

W. C. HARRISON & CO., Columbus, O.

THOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST.

MATTERS OF BUSINESS.

The Supply of Grain.

The crop report for March of the Department of Agriculture relates to the distribution of corn and wheat, and the stocks remaining on farms. It is not a census of individual holdings of growers, but is based on county estimates of the percentage of last year's product remaining, made by a board of correspondents in each county, and also by an independent board, reporting to the State Agent. All grain, including any surplus of previous years, is included. These separate results are scrutinized, obvious errors and inconsistencies corrected, differences harmonized, and ultimate statements tabulated by States to show both percentages and aggregate quantities.

The Corn on Hand, as estimated, aggregates 626,847,370 bushels, or 38.5 per cent. of the last product. This proportion has been exceeded in March four times in the last ten years, and the quantity has been exceeded five times. The consumption of eight months, 1,001,616,630 bushels, only exceeds that following the smaller crops of 1887 and 1890.

The aggregate sold from farms to go beyond county lines is 277,379,000 bushels, or 17 per cent. of the crop. The proportion merchantable is 1,345,445,000, or 82.6 per cent. The values returned for merchantable corn average 42.9 cents, for unmerchantable 27.7 cents, making an aggregate of $655,000,000, which exceeds the December valuation by $13,000,000, averaging 40 cents per bushel.

The Estimated Proportion of Wheat on Hand is 26.2 per cent. of the last crop, the smallest percentage in 10 years. The quantity on hand aggregates 135,000,000 bushels, 36,000,000 bushels less than last March, and 23 more than the remnant of the very small crop of 1890. A very large proportion is found in States that do not spare a bushel for commercial distribution; only 34,000,000 in the principal spring wheat States, more than half of which is required for seed in the spring. Of the winter wheat States only Kansas and California have any considerable surplus available for commercial distribution.

The wheat exported in 12 months is 191,000,000 bushels, required for consumption 300, seed used 54, visible stocks 79, a total of 624,000,000 against an apparent supply of 728,000,000 bushels. There is, therefore, an apparent excess of distribution from the last two crops, of 31,000,000 bushels, as compared with previous estimates, showing, if present estimates are correct, which cannot be positively assured, that the crops of 1891 and 1892 were underestimated by two or three per cent. which would be a very close margin on the safe side. This fully confirms the AMERICAN AGRICULTURIST'S review in our November number. Very little old wheat is reported on hand.

The average weight of the crop, per measured bushel, as calculated from returns of millers and State agents and correspondents, is 57.5 pounds, reducing the estimated product to 494,000,000 commercial bushels for the 1893 crop, against 500,000,000 bushels as estimated by the AMERICAN AGRICULTURIST in its October number.

Breadstuffs Exports are much less this season than one year ago, when they were abnormally large because of the famine in Europe. The figures of United States exports thus compare, including meal or flour reduced to its equivalent of whole grain (of wheat flour 1,025,627 barrels were exported this February against 1,413,751 barrels, 10,964,961 barrels in the eight months compared to 9,573,182 for the like period one year ago, at an average value of $4.60 per barrel now against $5.03 then):

(000's omitted in the first four columns.)

	February.		*8 Mos. to Mar. 1*		*Val pr bu*	
	1893	1892	1893	1892	'93	'92
Barley.....	20	157	1,551	2,169	$0.50	.57
Corn.....	3,375	12,801	22,943	45,838	.52	.52
Oats.....	52	442	918	7,747	.47	.40
Rye.....	101	788	1,106	9,495	.63	1.01
Wheat.....	12,765	15,188	131,755	159,598	.78	1.03
Total bu.	16,502	29,376	158,273	224,847	.....	.....
Val. dollars	$12,982	$23,851	$131,174	$210,087	.....	.....

Personal, Commercial and Agricultural.

American Clydesdale Association.—The Association has made an appropriation of $100 in cash for prizes for essays on the Clydesdale Horse. The conditions governing awards, and such other information as may be desired by competitors may be obtained by addressing Sec'y C. F. Mills, Springfield, Ill.

Reliable Dyes.—Anyone wishing to dye any sort of cloth will receive much useful information by writing to the French Dye Co., Vassar, Mich.

Caponizing Implements and Instructions.—Our readers will do well to write to George P. Pilling & Son, Philadelphia, for their complete Guide for caponizing, which will be mailed free to all who mention the AMERICAN AGRICULTURIST.

Bees and Honey.—Those who are interested in bees or honey should send to A. I. Root, Medina, Ohio, for his catalogue and a sample copy of *Gleanings in Bee Culture*—a semi-monthly magazine of 36 pages. Samples sent free for the asking.

American Jersey Cattle Club.—Volume XXXIX of the *Herd Register*, containing the entries of 6,500 animals, is now ready for distribution. Free to members on application. $1, post-paid, to non-members. Address Sec'y J. J. Hemingway, No. 1 Broadway, New York.

A Salary, with expenses paid, will come handy to any one who is now out of employment, especially where no previous experience is required to get the position. If you want a position, see advertisement on Page 262 headed, "A Chance to Make Money."

American Apples in England.—The latest cables to Otto G. Mayer & Co., 9 Bridge St., New York, state that the Liverpool demand for American apples continues active, with even slight advances on the previous high prices. Up to date this year 630,452 barrels were received, against 752,142 barrels for the same period last year.

Poultry Netting Fence.—An excellent wire netting for poultry yards is made by the McMullen Woven Wire Fence Co., 120 N. Market street, Chicago, Ill. The wire is galvanized before weaving, and there are three strands in the selvage. It is furnished in any width up to 96 inches. It will not sag, rust at the joints, nor untwist at the ends.

Harness and Buggy, Free Offer—A $10 set of harness for only $4. A $100 top buggy for only $49.75. You can examine our goods at your place before paying one cent. Send for illustrated catalogue, giving prices to consumers that are less than retail dealers' actual cost. Send address and this advertisement to Alvah Mfg. Co., Dept. A. 34, Chicago, Ill.

Crystal Creameries.—Glass can creameries are deservedly popular, being easy to purify and keep sweet and clean. Those made by the Crystal Creamery Co. of Lansing, Mich., are guaranteed to stand freezing and give complete satisfaction. No other ordinary substance is so easily cleaned as glass, and all others impart some degree of taint or impurity to the milk.

A Great Picture Free.—Mr. John Lewis Childs, of Floral Park, N. Y., the well known seedsman and florist, has issued a lithograph of Gladiolus Childis, showing several spikes of bloom. It looks like an oil painting, and is really one of the most striking things ever produced in floral art. Mr. Childs will, however, mail it free of charge to any of our readers who mention this magazine and send him 10 cents for postage and packing.

Sewing Machines.—No firm has been more successful than the Oxford Mfg. Co. of Chicago. It is not the result of accident. Furnishing sewing machines direct to the consumer has enabled them to send out their popular machines at figures lower than it seems possible to construct them. Nearly 2,000 machines a month is their present record. Any reader of this paper can get free their new illustrated catalogue by writing for it.

A Succesful Western Nursery.—The Stark Bros. Louisiana, Mo., Nurseries and Orchards run their own special through cars by fast trains direct from their packing grounds to their supply depots at Chicago, St. Louis and Kansas City, from which points their customers secure the lower third class freight rate on the boxed trees, which are delivered free on board cars at these three central points. Write for descriptive circular and price list, mentioning this magazine.

How to Make a Good Fence.—The Empire Standard Fence Machine has been in general use for over eight years, and, as a practical fence builder, has proved a decided success. It is manufactured by the Empire Machine Co., Richmond, Ind., whose reputation for reliable goods, prompt and fair dealing, is of the very best. Their catalogue, which is full of useful information in regard to fence building, will be sent free to any address, mentioning this magazine.

American Southdown Premiums.—At all State and Provincial Fairs where separate classes are provided in 1893 for recorded Southdowns, the American Southdown Breeders' Association will offer a Special Premium of the first four volumes of the American Southdown Record for the "two best recorded lambs"—one ram and one ewe—bred and exhibited by a resident of the State or Province in which the Fair is held. For further particulars address Sec'y S. E. Prather, Springfield, Ill.

Flexible Steel Fences and Guards.—A steel picket fence is not only handsome and dog-tight and is quite cheap when compared with wood pickets considering painting and all. This lawn fencing is made by the Hartman M'f'g Co., Beaver Falls, Penn. Their steel guards are a great protection to trees. Their flower guards support plants and will hold up tomato vines. They do not harbor vermin and have a light, graceful appearance. This company makes the "Hartman Flexible" steel wire door mat.

Spraying Pumps.—The killing of injurious insects and fungi by a spray of chemical solutions, is one of the most beneficial inventions of this century. To apply the chemicals in the proper manner, the very best apparatus should be used, such

(*Continued on Page* 262.)

Your Painter

has often wasted time and material in trying to obtain a shade of color, and has even resorted to the use of ready mixed paints, the ingredients of which he knew nothing about, because of the difficulty in making a shade of color with white lead. This waste can be avoided by the use of National Lead Company's

Pure White Lead Tinting Colors.

These tints are a combination of perfectly pure colors put up in small cans and prepared so that one pound will tint 25 pounds of Strictly Pure White Lead to the shade shown on the can. By this means you will have the best paint in the world, because made of the best materials—

Strictly Pure White Lead

and pure colors. Insist on having one of the brands of white lead that are standard, manufactured by the "Old Dutch" process, and known to be strictly pure:

"ANCHOR" (Cincinnati)
"ARMSTRONG & McKELVY" (Pittsb'gh)
"ATLANTIC" (New York)
"BEYMER-BAUMAN" (Pittsburgh)
"BRADLEY" (New York)
"BROOKLYN" (New York)
"COLLIER" (St. Louis)
"CORNELL" (Buffalo)
"DAVIS-CHAMBERS" (Pittsburgh)
"ECKSTEIN" (Cincinnati)
"JEWETT" (New York)
"KENTUCKY" (Louisville)
"FAHNESTOCK" (Pittsburgh)
"LEWIS" (Philadelphia)
"MORLEY" (Cleveland)
"RED SEAL" (St. Louis)
"SALEM" (Salem, Mass.)
"SHIPMAN" (Chicago)
"SOUTHERN" (St. Louis and Chicago)
"ULSTER" (New York)
"UNION" (New York)

These brands of Strictly Pure White Lead and National Lead Co.'s Pure White Lead Tinting Colors are for sale by the most reliable dealers in paints everywhere.

If you are going to paint, it will pay you to send to us for a book containing information that may save you many a dollar; it will only cost you a postal card to do so.

NATIONAL LEAD CO.,
1 Broadway, New York.

Does Your Roof Leak?

We will send You FREE of Expense,
Samples and Full Particulars.
F. W. BIRD & SON,
SOLE MAKERS,
East Walpole, Mass.

Then You Don't Use the Right Kind of Roofing. Roofs Covered with

Neponset Water-Proof Fabrics

NEVER LEAK. HOUSES SHEATHED WITH IT NEVER COLD.

HEN HOUSES covered with it never grow cold. Keeps Frost, Rain, Snow, Cold and Vermin out, Keeps the warmth in. Takes the place of and costs one-third the price of Shingles.

Only $5.00 for 500 Sq. Feet.

ANY ONE CAN PUT IT ON.

LOOK FOR
RED WRAPPER
WITH
BLUE ENDS
AND
TRADE MARK
on Every Roll of Genuine Neponset.
DISTINCTIVE MARKS.

TIME

rights all things except the wrongs of disease. Only prompt, experienced medical skill can do that, and no institution has more efficient physicians or finer equipment than the Cosmopolitan Dispensary, corner Wabash-av. and Madison-st., Chicago, Ill. All Acute, Chronic and Nervous diseases are treated. Surprising results have been attained in the most obstinate cases. Light, airy apartments for patients undergoing surgical operations. Particular attention to nervous diseases, the result of overwork or dissipation. All medicines are furnished and carefully compounded by experienced chemists. Every conceivable apparatus, appliance and device adopted by science used in the treatment of diseases. Write for symptom sheet.

FREE TRIAL. 10 YEARS.

How $14 Buys A $40 Machine.

For sixty days only we offer our **OXFORD JEWEL SEWING MACHINE, No. 17,** guaranteed for **10 years** on terms below mentioned. This machine has best sewing qualities and does as large a range of work as any machine made. It uses the American self-threading shuttle and self-setting needle with **all Attachments Free.**

We will ship one of our **Oxford Jewel** three drawer and cover, walnut or oak, sewing machines, on 30 days' trial, subject to approval for $15.00 and if not satisfactory can be returned at our expense. **We pay all freight charges.** *It costs you nothing* to try our machine. For cash in full with order we will ship same machine for **$14.00. We bind ourselves,** if machine is not satisfactory and just as we stated to return all money. **Where can you buy on better terms? Do not let this opportunity of a life-time pass. Cut this out and send it with your Order to-day.** Our large Catalogue will be sent free to any address.

THE OXFORD MANUFACTURING CO.
342 & 344 Wabash Ave., CHICAGO, ILL., U.S.A.

The MODERN HERO
GRINDING MILL.

Guaranteed the Best All Round Mill in the Market.
Grinds Fast; Grinds Fine; Grinds Cool.

Suitable for any power, 2 to 8 horse, either belt or tight gear. Two kinds grinding burr, one for oats, one for corn, which will make very nice meal. Either burr warranted to do better work on any grain than any other. The **Hero Mill** sold either with or without our celebrated **Hero Power.** *Prices lower than any other mill of equal capacity.*

BUY ONE AND SAVE TOLL AND LABOR DRAWING TO MILL.

Send for handsome illustrated catalogue giving full description of our celebrated
Hero Mill and Power, American Grinding Mills, Royal and Chief Tread Powers, Hero Fodder Cutters, Wood Saws, Drag Saws, Corn Shellers, Sweep Powers, Peck Husking and Shelling Attachment, Etc.

APPLETON MFG. CO.,
Minneapolis, Minn. 19 So. Canal St. CHICAGO. Appleton, Wis.

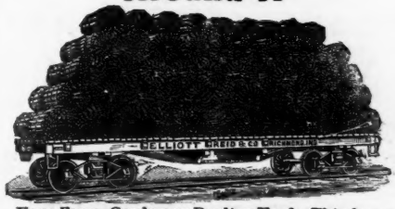
"IRON AGE" TOOLS.

They SAVE TIME and MONEY and never lose either by continual repairs.
Absolutely THE BEST and safest to buy. Insist on your dealer having them—don't accept something else "just as good."

Have you seen the new "IRON AGE" Riding Cultivator? A SPLENDID TOOL. Don't fail to learn all about it.

E. S. & F. BATEMAN, Grenloch, N. J.

Put a Richmond Fence Around It



—Your Farm, Garden or Poultry Yard. This fence is the best—is made of **Seasoned White Oak** and **Heavy Steel Wire.**
Send 50c for prepaid samples. Agents wanted.
THE ELLIOTT & REID CO., Richmond, Ind.

WALL PAPERS

The most complete set of samples and instructions how to paper sent **FREE!** We have the largest and best selected stock in the U. S. It will pay you to see our samples before purchasing.
CHAS. M. N. KILLEN, 614 & 616 So. 20th St. Phila.

PRESSES, DIES AND OTHER
FRUIT CAN TOOLS
SEND FOR CATALOGUE
FERRACUTE MACHINE CO.
BRIDGETON, N. J.

KEMP'S MANURE SPREADER

Pulverizes the Finest. Easiest in draft. Most Rapid in work. **Over 8000 in Actual Use.** Sold on its merits. **Valuable improvements for 1892.** Write for circulars to
KEMP & BURPEE MFG. CO. Box 52, SYRACUSE, N. Y.

BICYCLE TO ANY BOY OR GIRL under 18 years of age who will work for us after school. NO MONEY NEEDED. Send this adv. to A. CURTIS & CO., 46 WEST QUINCY ST., CHICAGO, ILL. **FREE**

CARDS Send 2c. stamp for Sample Book of all the FINEST and LATEST Styles in Beveled Edge, Hidden Name, Silk Fringe, Envelope and Calling CARDS FOR 1893. WE SELL GENUINE CARDS, NOT TRASH. UNION CARD CO., Columbus, Ohio.

MATTERS OF BUSINESS.

(*Continued from Page* 260.)

as automatic mixers, brass working parts, heavy hose and Vermorel nozzles. An excellent line of these appliances is made by the Field Force Pump Co., 100 Bristol Ave., Lockport, N. Y. We advise our readers to write for their free book of spraying instructions, mentioning this magazine.

Grass Seeding Machines.—Our forefathers were forced to earn their bread "in the sweat of the brow." With the farmer of the present day, however, it is vastly different. Modern inventions have lightened man's labor and made it more profitable. One of the most popular of labor-saving implements of the day is the original wheelbarrow grass seeder, manufactured by O. E. Thompson & Sons, Ypsilanti, Mich. It is popular because perfectly adapted to its purpose. It is economical as well, and will pay for itself in the seeding of 30 acres.

Artificial Limbs.—We are frequently asked by some unfortunate person who has suffered the loss of a leg or arm, for the address of a reliable manufacturer of artificial limbs. From all we can learn, however, we feel justified in stating that George R. Fuller, United States Government Manufacturer (Dept. 14), of Rochester, N. Y., is one of the best known manufacturers, and can be relied upon to do thoroughly first-class work in this line, and at extremely low prices. His business has been established for over thirty-five years, and his financial standing is such as to make it perfectly safe to enter into a contract with him. Mr. Fuller also manufactures crutches, trusses, elastic stockings, etc., and we are assured that any who address him will receive valuable information on this subject.—*Pharmaceutical Era.*

Certain Trade Secrets of great interest to all users of paints are described in the books published by the National Lead Co., of No. 1 Broadway, New York. The first of these catalogues shows up in detail certain misleading brands of paints, and gives the analyses of them, showing adulterations of from 50 to 100 per cent.; that is to say, many of these brands that claim to be strictly pure white lead contain no white lead at all, but a large admixture of barytes and oxide of zinc. In order to protect the names and brands of honest white lead, their owners have associated themselves in the above named company, and guarantee their paints and colors to be of the highest standard quality. If you write for their books, stating that you are a subscriber to the AMERICAN AGRICULTURIST, they will also send you a sheet of sample shades. It is to the advantage of every one to apply for these documents immediately.

National Berkshire Record Association.—Many Berkshire breeders met at Piqua, O., on March 1, 1893, to discuss the advisability of forming a new Berkshire record. O. P. Wolcott, Conover, O., was selected president. He called on the breeders to express themselves, and the general feeling was to organize a new association. Of the letters from Berkshire breeders in all parts of the United States only one out of the fifty was opposed to the move. The new association was called the National Berkshire Record Association. The capital stock will be $1,000, divided into 100 shares, at $10 each, and no breeder can hold more than two shares of stock. The rates are: Recording pedigree, to stockholders, 75 cents; recording pedigree, to non-stockholders, $1; volumes not to be over $2.50 each; pedigree blanks, books of fifty, 50 cents; books of 100, $1; transfer blanks, books of 100, 50 cents; all transfers to be published free. The association is ready for business, and the

(*Continued on Page* 263.)

SEEDS.

My Annual PRICED CATALOGUE is now ready and mailed free to all applicants. It contains all the leading and most popular sorts of

VEGETABLE, FARM, —AND— FLOWER SEEDS,

Besides all the desirable novelties of last season, and nearly everything else in my line of business.

ALFRED BRIDGEMAN,
37 East 19th Street, New York City.

A CHANCE TO MAKE MONEY. Salary and Expenses paid, or commission if preferred. Salesmen wanted. No experience needed. Address, stating age,
THE C. L. VAN DUSEN NURSERY CO., Geneva, N. Y.

CLEMATIS PANICULATA.
The most **Popular New Climber.** Three finely rooted plants by mail for **$1.00.** New catalogue of **Trees, Shrubs,** etc., *Free.*
THE WM. H. MOON CO., Morrisville, Pa.

NORTHERN GROWN Small Fruit Plants, etc. No. 1 stock. Low Prices. Send for Catalogue. **Alton M. Shepherd,** Minneapolis, Minn. Box 55.

JOHNSON'S ANODYNE LINIMENT
UNLIKE ANY OTHER FOR HOUSEHOLD USE.
Was originated and first prescribed by AN OLD FAMILY PHYSICIAN in 1810. Could a remedy without real merit have survived over eighty years?
SOOTHING, HEALING, PENETRATING For INTERNAL and EXTERNAL use.
Stops Rheumatic Pains and Inflammation. Cures Croup, Colds, Sore Throat, Tonsilitis, Colic, Cramps and Pains, Summer Complaints, Cuts and Bruises like magic. Cures Coughs, Asthma, Catarrh, Bronchitis, Cholera-Morbus, Chilblains, Chaps, Soreness in Body or Limbs, Stiff Muscles or Strains. Inhale for Nervous Headache. Ill'st'd Pamphlet free. Sold everywhere. Price 35 cts. Six bottles, $2.00. I. S. JOHNSON & CO., Boston, Mass.

You Dye in 30 minutes
Turkey red on cotton that won't freeze boil or wash out. No other will do it. Package colors, 2 lbs. by mail 10 cts., 6 of any color for cotton or wool 40c. Big pay agents, write quick. Mention this paper.
FRENCH DYE CO., Vassar, Mich.

Farmers SEND YOUR Produce
To F. I. SAGE & SON, 183 Reade St., N. Y.,
Receivers of all kinds of COUNTRY PRODUCE, including Game, Live and Dressed Poultry and Dressed Calves. *Specialties*—Berries, Grapes, Apples, Pears, Honey, Onions and Potatoes. Correspondence and consignments solicited. Stencils furnished. Reference: Dun's or Bradstreets Commercial Reports, to be found at any bank.

GREEN MOUNTAIN GRAPE
Entirely Hardy and very vigorous, the vines bearing a fruit of exquisite flavor.

Stood the test of 7 years and pronounced the earliest and best grape on the market.
CAUTION The enormous success this grape has met with has caused substitutes to be placed on the market. Buy NO vine without the above trade-mark seal.
Illustrated circular sent upon application. **AGENTS WANTED**
STEPHEN HOYT'S SONS, New Canaan, Conn.

TREES NEW and OLD
experienced buyers and planters everywhere favor the **Shady Hill Nursery Co.,** CAMBRIDGE, MASS. Special advice and plans for planting this spring given gratis. Send for Catalogue with Novelties only offered by us.

NATIVE EVERGREEN PLANTS—Balsam, Fir, Hemlock, Arbor Vitæ, White Pine and White Spruce, 6 to 12 inches, at $3 for 1000, $10 for 5000,, $17.50 for 10,000. Packing free.
JAMES A. ROOT, Skaneateles, N. Y.

HEADQUARTERS
For the **Leader Strawberry.** The most profitable berry ever put on the market. **30 other varieties.** Send for catalogue. **C. S. PRATT, Reading, Mass.**

MUST HAVE Agents AT ONCE. Sample Sashlock (Pat. 1892) free by mail for 2c. Stamp. Immense. Unrivalled. Only good one ever invented. Beats weights. Sales unparalleled, $12 a Day. *Write quick.* **Brohard & Co., Phila.**

RUBBER GOODS OF EVERY DESCRIPTION BY MAIL. Send for catalogue.
A. U. BETTS & CO., Box 17, Toledo, Ohio.

WHOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST

NOVELTY CATALOGUE

of uncommon beauty and precision in description, with numerous full-page colored and photo-engraved illustrations of new, rare and beautiful Plants, Seeds and Bulbs. This fine book can be had free on application.

PITCHER & MANDA,
SHORT HILLS, N. J.

A ROYAL Collection of FLOWER SEEDS.
Expert gardeners and florists who demand the very choicest quality seeds are my regular customers, and they pronounce my **prize strains** of Flower Seeds **the best in the market.** To test the public appreciation of my best seeds, I will send, on exceptionally low terms as per offer below, one packet each of the following varieties:
New Comet Asters, beautiful long-curled petals, not unlike large flowered Japanese Chrysanthemums, **Large German Pansies,** finest mixed, **Royal Splendor Verbenas,** large size, rare and brilliant colors, **Giant Phlox** 20 varieties, **New Double Lilliput Zinnias,** 10 colors, a superb strain **Finest Double Poppies,** choice **Japan Pinks, Elegant Petunias,** mixed **Sweet Peas, Portulaca,** and three other popular varieties.
FOR ONLY 35 CENTS will send postpaid 13 packets of the above collection to all ordering immediately. Purchased separately would cost at least **$1.35. A. B. HOWARD, Seed Grower, Belchertown, Mass.**

BLOOMINGTON (PHŒNIX) NURSERY. 600 ACRES. 13 GREENHOUSES.
TREES AND PLANTS
We offer a large and fine stock of every description of **FRUIT** and **ORNAMENTAL TREES, Shrubs, Roses, Vines, Small FRUITS, Hedge Plants, FRUIT** and **FOREST TREE SEEDLINGS.** Priced Catalogue mailed free. **Established 1852.**
PHOENIX NURSERY COMPANY
Successors to SIDNEY TUTTLE & CO., BLOOMINGTON, ILL.

No Trees of 1st quality can ever be sent by mail. Mayhap you know it. By freight, prepaid if preferred, we ship safely 4, 5, or 6 ft. trees; 2-year Roses of rare excellence—everything! You actually pay less than for the puny stuff. 1,000 acres Nurseries. 20,000 acres Orchards. Exact information about trees and fruits. Stark Bros., Louisiana, Pike Co., Missouri. Founded 1825.

SHUCKLESS STRAWBERRIES
part readily from the stem, the shuck remaining on the stem instead of the berry, which is ready for immediate use. Write for description and price. 20 other best kinds cheap.
The HOOVER & GAINES CO., Dayton, Ohio.

Japan Plums bear abundant crops *every year* in localities where curculio and black knot entirely destroy other kinds. **$800** per acre can be made the 3d year. Send stamp for Plum circ. and Catal'g of Fruit and Ornamental Trees and Plants.
WM. F. BASSETT & SON, Hammonton, N. J.

MATTERS OF BUSINESS.

(*Continued from Page* 262.)

secretary is receiving and numbering pedigrees. Send for a copy of the constitution and by-laws to secretary E. K. Morris, Indianapolis, Ind.

A Grand Implement.—Every farmer recognizes the great importance of the thorough pulverization of the soil for the best development of his crops. In few classes of agricultural implements has there been so great and substantial improvement as in harrows. The ingenuity of inventors, which has been displayed since the days when the only harrows in use consisted of branches of trees up to the design and manufacture or the complete and improved Acme harrow, is almost wonderful to behold. The Acme pulverizing harrow, clod crusher, and leveler combined, is so perfect a tool for the purposes for which it is intended, that one is easily led to believe that in this implement perfection has been reached to the fullest extent. Now that the cost of the Acme has been reduced, it has become within the reach of the smallest farmer, and furthermore, the manufacturer will send a harrow on trial to any responsible farmer, and if it does not prove satisfactory, it may be returned at the expense of the manufacturer. Every farmer who has not already this valuable tool in his possession, should not fail to send to the manufacturer, Duane H. Nash, Millington, N. J., for the handsome, illustrated, and descriptive catalogue which he will gladly send free to readers of the AMERICAN AGRICULTURIST.

Exports of American Cattle to South America.—Messrs. Smith and Powell, of the Lakeside Stock Farm, Syracuse, N. Y., have recently shipped to the President of the Republic of Venezuela probably the finest collection of Holstein-Friesian cattle ever shipped out of this country, including the bulls Clothilde 6th's Statesman, Aegis Netherland Clothilde, and Netherland Peerless Clothilde, and the cows Carlotta 3d, Clothilde 6th's Netherland, Princess Netherland, Clothilde, Idene Rooker's Clothilde, Netherland Artis Clothilde, Netherland, Duchess Netherland, Charity 7th, Belle Aaggie, and Netherland Consort 2d. These animals are too well known to Holstein-Friesian breeders to require special comment, although it may not be amiss to mention the fact that the seventeen direct female ancestors of Aegis Netherland Clothilde have butter records which average over twenty pounds and four ounces in a week, and milk records which average 15,793 pounds in a year, also that four two-year old heifers in this list have made butter records which average about fourteen pounds in a week.

Probably No Train in the world has had so much said and written about it as the New York Central's great flyer the "Empire State Express." The English papers have illustrated it time and again; in darkest Africa its merits are discussed around the camp fires of Emin Pasha; in farther India the British army officers wonder if it is possible that old England has been again outdone by Yankee genius; from China and Japan come admiring letters of commendation for this latest achievement of Western enterprise; at the recent graduating exercises of an Eastern seminary, the prize essay was by a young lady from New England on "Speed as an Incentive to Travel," (a ride on the Empire State Express having suggested this theme.) The newest endorsement of this wonderful train is from a youthful Staten Island poet; the following letter and poem, received a short time ago by General Passenger Agent Daniels, explain themselves, and clearly prove that the children of the present generation are in full accord with the spirit of improvement and enterprise which marks the closing decade of the nineteenth century:

STAPLETON, STATEN ISLAND,
October 3, 1892.

Dear Sir:—Inclosed, please find a poem about your great train, the "Empire State Express." I am a boy about twelve years old and wrote this without any help whatever. I send it, hoping it may be of use to you as an advertisement, and remain Yours respectfully,
B. S. JACOBS.

"To you who like to travel fast
Just this on your mind impress,
That the fastest train in the wide, wide world
Is the 'Empire State Express.'

"'Tis our 'greatest railroad's' greatest train,
And it's never a moment late
As it speeds on its way from end to end
Of this grand old Empire State."
Judge.

It Pays to Read the American Agriculturist.—By carefully reading the AMERICAN AGRICULTURIST, I have made money which I could not have made if I had not followed the advice of the editors. F. C. QUACKEY, Polk Co., Wis.

A TOBACCO-STINKING BREATH

is not nice to carry around with you. If you are tired and want the means of an immediate release, get a box of NO-TO-BAC the harmless, guaranteed tobacco-habit cure. Sold at drug stores. Book called, "Don't Tobacco Spit and Smoke your Life Away," tells all about it; mailed free. Write to-day.

Address **THE STERLING REMEDY CO.,**
Box 754, Indiana Mineral Springs, Ind.

The Sun in all its Glory is no brighter than the man who buys direct from OUR FACTORY a

COMPLETE TOP BUGGY And HARNESS For $35.00

LESS THAN WHAT THE SAME QUALITY WOULD COST FROM A LOCAL DEALER. We are making the finest line of vehicles and harness for the money in America. All **FOSTER VEHICLES** are sold with a guarantee. **If you want to Save Money** write at once for our fine large Illustrated Catalogue. **IT IS FREE TO ALL.**

You will make a mistake if you buy a Vehicle or Harness before seeing our Catalogue.
FOSTER BUGGY & CART CO., No. 16, Pike Bld'g, CINCINNATI, O.

THE COST IS THE SAME

The Hartman Steel Picket Fence

Costs no more than an ordinary clumsy wood picket affair that obstructs the view and will rot or fall apart in a short time. The Hartman Fence is artistic in design, protects the grounds without concealing them and is practically EVERLASTING. Illustrated Catalogue with Prices and Testimonials Mailed Free.
Branches: **HARTMAN MFG. COMPANY, BEAVER FALLS, PA.**
102 Chambers St., New York; 508 State St., Chicago; 51 and 53 S. Forsyth St., Atlanta, Ga.

The ACME HAND POTATO PLANTER,

A Simple, Durable and Practical Implement.

Works Perfectly in Clay, Gravel or Sandy Soil, Sod or New Ground.

Plants at Any and Uniform Depth in Moist Soil.

Makes Holes, Drops and Covers at one Operation.

No Stooping. No Backache. One Man Plants Two Acres a Day.

Indorsed by the Leading Farmers and Potato Growers.

AGRICULTURAL COLLEGE, Lansing, Mich., says: "They have outdone our expectations. They will find favor among practical farmers, as they are simple, cheap and save a great deal of labor and do better work. Please send us four more for our spring work." **Sent Free on Receipt of Price, $2.00.** Mention this Paper.

POTATO PLANTER CO., Traverse City, Mich.

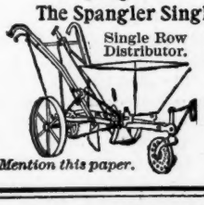
A SOLID STEEL FENCE.

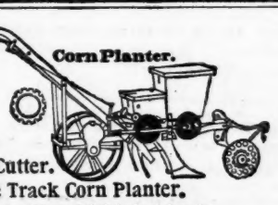
MADE OF EXPANDED METAL.

For Residences, Churches, Cemeteries, Farms, Gardens, Gates, Arbors, Window Guards, Trellises.
Write for Illustrated Catalogue No. 13. **CENTRAL EXPANDED METAL CO.**
Hardware Men Keep It. Give name of this paper. **531 Wood St., Pittsburgh, Pa.**

WE ARE HEADQUARTERS FOR

The Spangler Broadcast Fertilizer Distributor.
The Spangler Single Row Fertilizer Distributor.
The Spangler Corn Sheller.
The Spangler Lime Spreader.
The Spangler Feed and Fodder Cutter.
The Spangler Narrow and Wide Track Corn Planter.
The Spangler Low-down Grain Drill, with high wheels.


Single Row Distributor.


Corn Planter.

Mention this paper.

Address **THE SPANGLER MFG. CO., York, Pa.**

SPRAY PUMP FREE **SALARY PAID AGENTS**
YOU MUST SEND 10 CENTS TO PAY THIS AD IF YOU DON'T WANT AGENCY SEND $2.50
A. SPEIRS, B 45 N. WINDHAM, MAINE

NOTE AND COMMENT.

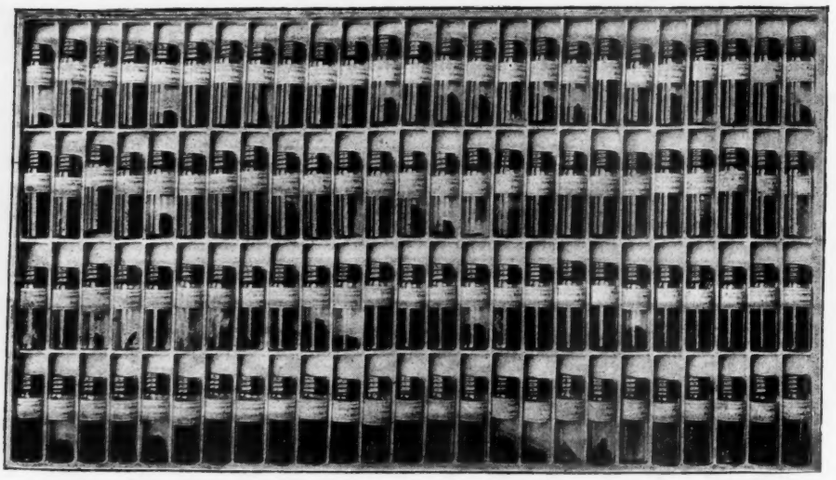
(*Continued from Page 259.*)

checked by laws, unless they were so drastic as to be fatal to the material welfare of the whole community.

That cities should grow more rapidly than the country is, under present conditions, an economic necessity. The generally low prices of farm products for some years, show that the supply of such products is increasing at least as fast, and probably faster, than the increase in population. In the United States, although the census of 1890 showed an increase of but 12 per cent. in the rural population, and of less than 25 per cent. in the entire population, the increase in the production of wheat was 44 per cent., of corn 43 per cent., of oats 85 per cent. In the cotton belt, the only agricultural portion of the older States in which there has been any considerable increase of rural population, we see in the great over-production of cotton, for several years in succession, what would necessarily happen in other staple products if as large a proportion of the population as formerly attempted to earn their living by tilling the soil. The whole tendency of the factory system, made possible by improved machinery and cheap transportation, is to draw away from the country districts almost all the population not directly engaged in farming.

One Hundred Kinds of Weed Seeds.

A large number of our readers, and seed buyers in particular, are interested in what is shown in the accompanying engraving. It is to represent a collection of weed seeds that has been made by Dr. Byron D. Halsted, Botanist of the N. J. Experiment Station, New Brunswick, N. J. It was a long and tedious piece of work to gather 100 kinds of weed seeds. They were not all collected in one locality, but botanists in various states lent a hand to the work. The seeds are placed in dram metal screw-cap vials and arranged in a shallow tray, as shown in the engraving. Each bottle has a printed label giving the botanical and common name of the kind of seed it contains. Pasted upon the



DR. HALSTED'S COLLECTION OF WEED SEEDS.

under side of the cover is a full list of all the kinds; after the name the letter *A* indicate that the species is an annual, and therefore lives for but a single year. Others are followed by *B*, indicating they are biennial, or last for two years; many others are with *P*, and are perennial, lasting indefinitely. The annuals are 48 species, biennials two, and perennials 35.

The hundred species of weeds represented by the seeds in the collection are destributed among 31 families, 26 belonging to the sunflower order.

The fact is well known to many that weeds are often introduced into new localities in field and even garden seeds. The most common vehicle is clover seed, and the next that of timothy grass. Last month on page 145 we showed a group of common weed seeds along with the clover seed. There is nothing so useful as the seeds themselves of the various weeds as a means of detection of foul stuff in commercial seeds. To this end Professor Halsted has prepared a number of these sets of weeds especially for experiment station workers, who are frequently called upon to determine weed seeds; and also for seedsmen, that they may be the better able to keep informed concerning weed pests. Several seed houses, we learn, have secured the collection, and it is hoped that much may be done in this way to rid our county of some of the worst enemies to the crop growers.

The Trouble with Country Life.—The decrease in the rural population is very clearly stated by Mr. Rose, whose article is briefly condensed in another column. It is, doubtless, true also that production has kept pace with population. Improved methods will, probably, enable us to keep on producing enough for ourselves, and a surplus for export, even with our decreasing area of new lands. But one great trouble with country life is not touched upon in the review referred to. This is the isolation of the average farmer's family, due to poor roads and infrequent communication by personal visitation, or by mail, telegraph, or telephone. With the expiration of the ground patent on telephones, it should not be many years before every thrifty farmer's house is connected by a cheap telephone service with his neighbors and with the market. A larger extension of telegraphy, with more mails and free delivery of letters and papers in country districts, is also needed. This, with better roads, electric railways, and good schools, centering about a free public library in every rural township, will give to country life all the advantages of our city friends with none of their disadvantages. The AMERICAN AGRICULTURIST emphasizes the importance of these essentials to the best conditions of country life, and urges whatever legislation may properly be needed in this direction, more especially immediate and liberal provision for better postal facilities for rural districts.

Remedies for Bee Stings. — Nathan Silver, Pueblo Co., Col., states that he has suffered very much from the sting of bees. The sting poisons his flesh, and sometimes produces a good deal of pain and swelling. Last fall a horse was stung by being tied too near the hives, and upset one of them. As the weather was warm, he was severely stung about the head. The immediate application of a strong solution of baking soda, saleratus, spirits of ammonia, spirits of turpentine, a quid of tobacco, a cloth rung out of hot water, or covering the part from the air, by cotton dipped in laudanum, ether, or chloroform, only for a minute, will give relief. But the remedies always at hand, as water, ice, mud, and cotton, must be depended upon in absence of better. A raw cut onion, salt and water, a weak solution of carbolic acid, and especially as a gargle when the sting is received in the throat, say ten to twenty drops, or more, to a glass of water, are good remedies.

YANKEE SWIVEL PLOW.

The Leading Wood-Beam Reversible Plow.

SEND FOR CIRCULARS.

SIZES FOR ONE, TWO OR THREE HORSES.

NOW OFFERED, with Foot-Latch, High Standard, Straight Cutter, Automatic Jointer, or Rolling Caster Coulter.

BELCHER & TAYLOR AGRICULTURAL TOOL CO., Box 120, Chicopee Falls, Mass.

"ACME" PULVERIZING HARROW, CLOD CRUSHER AND LEVELER

AS now made, is a general purpose Harrow that does the whole business from start to finish, viz., it cuts, lifts, turns, crushes, pulverizes, levels and smooths, all in one operation. Is made entirely of cast steel and wrought iron—*practically indestructible*—and, withal, is the CHEAPEST RIDING HARROW ON EARTH. Price of new style about 40 per cent. less than old style; in fact, it sells for about the same as an ordinary drag.

I deliver free on board at convenient distributing points.

SENT ON TRIAL To responsible farmers, to be returned at my expense if not satisfactory.

DUANE H. NASH, Sole Mfr., MILLINGTON, NEW JERSEY.

MENTION THIS PAPER.

NEW RARE AND BEAUTIFUL ASTERS.

COMET, mixed colors,	pkt., **15c**
TRUFFANT'S Peony flowered, mixed colors,	pkt., **10c**
ROSE flowered, mixed colors,	pkt., **10c**
VICTORIA, mixed colors,	pkt., **10c**
HARLEQUIN or Leopard,	pkt., **10c**

The above in **liberal packets** will be mailed to any address postpaid, on receipt of the prices annexed, or a packet of each variety for only **25 cents.**

Special mixed Asters, a choice assortment of the most popular varieties, giving a great variety for a little money, all colors. Liberal packet, 10c.

READ THIS:

"The Asters were elegant and admired by everybody. They germinated very quick, every seed came up and such a variety of colors and perfect bloom. They were superb." SUSIE E. WHITE, Maine.

A. B. HOWARD, Seed Grower, Belchertown, Mass.

OUR LIBRARY CORNER.

Recent Publications.

ONIONS FOR PROFIT. An Exposé of Modern Methods in Onion Growing. By T. Grenier. Philadelphia: W. A. Burpee & Co. 1893. 104 pp., il., 16 mo., paper.

The modern methods of growing onions are explained in this excellent volume. An entirely new phase of the onion business is presented by the author who is an expert in this line. The author explains how to make onion growing pay by proper selection, tillage and fertilization of the soil. The old and new methods of planting are described and the best methods of fighting weeds are given. The means of overcoming drouth by irrigation and cultivation are very ingenious. The various insect enemies and diseases of the crops are described, and their remedies treated. Separate chapters are given to the harvesting and marketing of onions. Sold by the Orange Judd Company. Price, postpaid, 50 cents.

THE EXTERNAL CONFORMATION OF THE HORSE AS RELATED TO THE SELECTION OF AN ANIMAL. 1. Conformation Scales or Points of the Horse; 2. Educational Scale of Points of the Horse; 3. Health Scale of Points of the Horse; 4. Historical Scale of Points of the Horse. By E. A. A. Granger, V. S. Advance Bulletin No. 89 of the Michigan Experiment Station, Agricultural College, Mich. 1892.

These provision scales of the value of the points in the various breeds of horses have been prepared in order that the admirers of each breed may express their views on certain points of excellence, making such alterations and additions as may seem to be profitable. The author requests the assistance of horsemen in the formation of a scale of points, which, coming from those who are intimately concerned, may be looked upon in the future as authority. The amended scales will be published in another bulletin.

ROCKY MOUNTAIN WEATHER FOR 1892. By B. C. Buffum. Being Bulletin No. X. of the Wyoming Experiment Station at Laramie. 1893.

Instead of issuing a number of small weather reports, the Wyoming Agricultural Experiment Station publishes all the meteorological tables for the year in one useful volume. Weekly and monthly bulletins are furnished the local newspapers of the State. This second yearly report contains summaries of the observations at the six experiment farms, and at eight other places. The highest Wyoming temperature for 1892 was 109°, and the lowest was 46° below zero. The average yearly temperature for the State at altitudes from 4,000 to 8,000 feet was 43°, and the rainfall was nearly 15 inches. In the southern part of the Sta the rainfall was less than nine inches, while in the northeastern part it was almost 25 inches.

KENNEL SECRETS. How to Breed, Exhibit and Manage Dogs. By "Ashmont." Boston: J. Loring Thayer Pub. Co. 1893. 348 pp., il., 8vo., cloth.

This magnificent book is a practical monograph on dogs, written by Dr. J. Frank Perry. The press work and the numerous full page half-tone engravings from photographs are of the highest artistic excellence. Definite rules are laid down for feeding dogs of the different breeds, under their various conditions of life. Full treatment is accorded to breeding, kennelling, exercise, drinking water, washing, grooming, troublesome insects, training, exhibiting, and there are clear and complete descriptions of all the breeds. No lover of man's most faithful friend should fail to read this excellent volume. Sold by the Orange Judd Co. Price, postpaid, $3.

CELERY FOR PROFIT. An Exposé of Modern Methods in Growing Celery. By T. Grenier. Philadelphia: W. Atlee Burpee & Co. 1893. 85 pp., il., 16 mo., paper.

The celery industry has recently very greatly increased, and this delicious vegetable is now found on nearly every table. The newer improved methods of culture are described in this volume. Sold by the Orange Judd Co. Price, postpaid, 30 cents.

THE JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND. Third Series. Volume 3, Nos. XI and XII. London: John Murray, 1892. 862 pp., il., 8 vo., paper.

This last quarterly publication contains many original articles of great interest and value to farmers. Many of these are as useful in America as in Europe. We note especially articles on horse breeding, wheat growing, the evolution of agricultural implements, cottage sanitation, and the fixation of free nitrogen. The articles on Allotments and Small Holdings by Sir John Bennett Lawes and Dr. A. H. Gilbert is of interest to American farmers whose farms are increasing rather than decreasing in area. Sold by the Orange Judd Company, price postpaid, per part, $1.50.

HARDY, HERBACEOUS PLANTS, SHRUBS, ORNAMENTAL AND TIMBER TREES; in Minnesota. With Notes on Their Hardiness and Durability for Cold Climates. By S. B. Green, Professor of Horticulture, University of Minnesota, Bulletin No. XXIV of the Minnesota Experiment Station, St. Anthony Park, Minn. 1892.

This work is of a practical nature and is intended to furnish reliable information to planters in the colder climates of America and to encourage the growing by nurserymen of a number of desirable plants adapted to such conditions. Where great difference in the type of plants is known, the hardiest form is given. This bulletin will answer many questions which arise in regard to the proper plants to use for park, street, and lawn planting in cold climates.

MANURES. How to Make and How to Use Them. By Frank W. Sempers. Philadelphia: W. A. Burpee & Co. 1893. 218 pp., il., 12mo., paper, or cloth.

Fertilizers are so necessary a factor to the most lasting success in farming, that this little volume will be useful to every farmer or gardener. The author is the chemist of the Fordhook Farm, and has made a concise, practical handbook containing the latest researches in scientific agriculture in all parts of the world. The reports of the agricultural experiment stations and of the Department have furnished many valuable suggestions. Both commercial and home-made manures are fully described, and many formulas for special crops and soils are given. Sold by Orange Judd Company. Price, postpaid, paper 50 cents, cloth $1.

SQUASHES: How to Grow Them. A Practical Treatise on Squash Culture. Giving Full Details on Every Point, Including Keeping and Marketing the Crop. New Revised and Enlarged Edition. By James J. H. Gregory. Illustrated. Marblehead: Published by the Author. 1893. 94 pp., il., 16 mo., paper.

The markets of the Atlantic States are now largely supplied with squashes grown by Western farmers. Since the first edition of this valuable treatise was written, many new varieties of squash have come into general cultivation, which are illustrated and described in this revised edition. Many new facts and suggestions are given. Sold by the Orange Judd Co. Price, postpaid, 30 cents.

SOUTH AFRICAN AGRICULTURIST'S ALMANAC FOR 1893. The Cape Farmers' Own Vade Mecum. By J. H. F. von Wurzburg-Schade. The Western Province Publishing Co., Wynberg, Cape Division. 224 pp., 12 mo., paper.

This eighth volume of the standard farm yearbook for South Africa is better than ever. The progress in farm, orchard, garden and dairy is fully treated in many original articles by specialists who are authorities. Sold by the Orange Judd Company. Price, postpaid, 50 cents.

JOURNAL OF THE BRITISH DAIRY FARMERS' ASSOCIATION. Vol. VII. Edited by Wm. C. Young, Sec'y, London, 1892. 297 pp., il., 8 vo., paper.

This report contains original articles on pleuropneumonia, oleomargarine, the testing of cows, dairying in Egypt and other warm countries, moisture in butter, and much other matter of practical interest to the enterprising dairyman. Sold by the Orange Judd Company. Price, postpaid, $1.

WISCONSIN FARMERS' INSTITUTES. A handbook of Agriculture. Bulletin No. VI. Edited by W. H. Morrison, University of Wisconsin, 1892. 256 pp., il., 8 vo., flexible cloth.

In this volume will be found the details of the methods used in conducting the excellent Farmers' Institutes of Wisconsin. Many of the talks by the farmers are printed and are full of practical ideas.

Australasian Sheep and Wool. Reports from Consuls. Secretary of State, Washington D. C. 1892. 246 pp., 8 vo., paper.

New Jersey Labor and Industries. Report for 1891. Bureau of Statistics, Trenton, N. J. 1892. 600 pp., 8 vo., boards.

Australia. Agricultural Gazette of New South Wales. Sydney: Department of Agriculture. Monthly. $3.

A National Road Department. Memorial to Congress. A. A. Pope, Boston, Mass. 96 pp., 8 vo., pamphlet.

The World's 1892 Crops. Consular Report No. 146. Secretary of State, Washington, D. C.

Ice and Refrigeration. A trade Journal. Chicago and New York: H. S. Rich & Co. Monthly. $2.

English Hops. Consular Report No. 147. Secretary of State, Washington, D. C. 1892.

Shoppel's Modern Houses. An Illustrated Architectural Quarterly. C.-O. B. P. A. New York. $2.

The Silver Question Settled. By Roderick H. Smith. New York: Baker & Taylor Co. 31 pp., 8 vo., pamphlet.

AGRICULTURAL EXPERIMENT STATION BULLETINS.

ALABAMA — At Auburn. Cotton experiments (B. 40).

COLORADO—At Fort Collins. Sugar beets; Irish potatoes; Fruit-raising (B. 21).

IDAHO—At Moscow. Organization and progress of work (B. 1).

IOWA—At Ames. New orchard fruits, trees, and plants; Experiments and studies in entomology; Crossing cucurbits; Root crops; Corn-growing; Depth of covering grass seed; Winter wheat; Calf-feeding; Hog-feeding; Soiling crops; Cheese-making; Automatic acid measure (B. 19).

KANSAS—At Manhattan. Actinomycosis bovis or lump-jaw of cattle (B. 35). Sorghum and sugar beets (B. 36).

KENTUCKY — At Lexington. Fertilizers (B. 43). Bordeaux mixture for apple pests (B. 44).

MARYLAND—At College Park. Tomatoes (B. 19). Agriculture (R. '92).

MASSACHUSETTS—At Amherst. Insects (H. B. 20). Weather (H. B. 49m).

MISSISSIPPI—At Agricultural College. Grapes (B. 22). Agriculture (R. '92).

NEW YORK—At Geneva. Bean diseases (B. 48). Potato scab; Bordeaux mixture for potato blight (B. 49).

NORTH CAROLINA—At Raleigh. Publications to September, 1892 (B. 87). Weather (B. 87b, 87c, 88a).

SOUTH CAROLINA—At Fort Hill. Experiments (R. '92).

TEXAS—At College Station. Black rot of the grape (B. 23). Cattle ticks and Texas fever (B. 24).

VIRGINIA—At Blacksburg. Fertilizers on corn (B. 23). Agriculture (R. '92).

WYOMING—At Laramie. Sugar beets in 1892 (B. 9). Rocky Mountain Weather (B. 10).

CANADA—At Guelph. Roots, potatoes and fodder corn (B. 86). The making of roads (S. B. '93).

UNITED STATES GOVERNMENT PUBLICATIONS.

UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D. C. Investigations relating to the treatment of Lumpy-jaw, or Actinomycosis, in Cattle (A. B. 2). Agriculture in France; report on Hungarian milling; the canning industry; tobacco experiments in Texas; European crop report for January and February; farm animals of the world; transportation rates (S. B. 101). Numbers and Values of Farm Animals, and Cotton Distribution. Hawks and Owls of the United States (O. B. 3). Experiment Station Record: Editorial notes on importance of physical factors in field experiments; article by W. H. Brewer on suggested experiments in breeding; condensed record of the contents of current bulletins of the agricultural experiment stations of the United States; abstracts of publications of the U. S. Department of Agriculture; abstracts of reports of foreign investigations; and items relating to the experiment stations (6, V 4). Report on the use of Indian corn in Europe (Norwegian edition), containing articles on the food value of maize and on the Indian corn industry in the United States. Report of the First Annual Meeting of the American Association of State Weather Services, Co-operating with the Weather Bureau, U. S. Department of Agriculture (W. B. 7). Monthly Weather Review.

CATALOGUES ACKNOWLEDGED.

C. E. ALLEN, Brattleboro, Vt.: Illustrated, descriptive Plant and Seed Guide.

EDWIN ALLEN & SON, New Brunswick, N. J.: Illustrated price-list of the New Brunswick nurseries. Spring of 1893. Vermont Beauty pear a specialty.

C. AULTMAN & CO., Canton, O.: Catalogue of threshers and engines. Illustrated annual of Phœnix engines and star threshers, tanks, loaders, weighers, baggers, saw-mills and horse powers.

AUTTMAN, MILLER & CO., Akron, O.: Annual Descriptive Catalogue of Buckeye Harvesting Machines and Binder Twine. Artistic colored cover and World's Fair illustrations, and Map of Chicago.

JOS. H. BLACK, SON & CO., Hightstown, N. J.: Illustrated, descriptive catalogue of the village nurseries. Mercer cherry a specialty.

W. ATLEE BURPEE & CO., Philadelphia, Pa.: Pictorial manual of thoroughbred live stock and fancy poultry. Collies a specialty.

BUSH & SON & MEISSNER, Bushberg, Jefferson Co., Mo.: List of leading and new varieties of American grapevines, spring of 1893.

COLE'S SEED STORE, Pella, Ia.: Garden annual and illustrated descriptive list of garden, farm and field seeds.

M. CRAWFORD, Cuyahoga Falls, O.: Catalogue of strawberries and gladiolus. Manual of strawberry culture.

J. S. COLLINS & SON, Moorestown, Burlington

Co., N. J.: Illustrated wholesale price-list of the Pleasant Valley nurseries. Small fruits a specialty, fruit and ornamental trees. Introducers of the Lincoln coreless pear.

JAMES H. DENHAM, Los Angeles, Cal.: Annual Illustrated Catalogue of Garden, Field, Flower, and Tree Seeds and Bulbs. Cacti a specialty.

T. J. DWYER, Cornwall, N. Y.: Illustrated and descriptive catalogue of general nursery stock, Orange Co. Nursery.

ELLWANGER & BARRY, Rochester, N. Y.: Supplementary catalogue of rare and choice trees, shrubs, and roses, including several valuable novelties, and many specialties of superior merit. Mount Hope Nurseries. Colored lithograph of roses.

H. G. FAUST & Co., Philadelphia, Pa.: Illustrated, descriptive catalogue of garden, field and flower seeds. Novelties and specialties for 1893.

D. M. FERRY & Co., Detroit, Mich.: Seed Annual for 1893. New and reliable illustrations. Chromo-lithograph cover and plates of Miss Blanche Ferry's sweet peas and early Michigan tomato.

FOLDING BATH TUB CO., Marshall, Mich.: Illustrated list of folding bath tubs, and sanitary bath chairs.

GEBROEDERS GRATAMA & Co., Hoogeveen, Holland: Price current No. 8 of roses. First special rose nursery in the Netherlands. European novelties a specialty.

G. H. & J. H. HALE, "The Elms," South Glastonbury, Conn.: Illustrated catalogue of pedigree plants. Berries and peaches a specialty. Colored plates of Hale's hardy Crosbey peach, and new strawberries.

PETER HENDERSON & Co., 35 Cortlandt street, New York: American Farmers' Manual, 1893. Grasses for meadows, pastures and lawns. Farm seeds.

HOBSON & Co., 4 Stone street New York: Illustrated list of garden, lawn, field and road rollers.

HENRY C. JEWETT, Jewettville, Erie Co., N. Y.: List of Standard bred trotting and pacing horses of the Jewett Farm, Cheney, Sedwick Co., Kansas. Half-tone page portraits.

JOHN MCGOWAN, Orange, N. J.: Wholesale price-list of carnations and cannas.

F. W. MANN, Milford, Mass.: Illustrated price-list of bone cutters for poultry food.

WM. PARRY, Parry, New Jersey: Illustrated catalogue and price-list of the Pomona Nurseries. Nut-bearing and ornamental trees a specialty.

PHŒNIX NURSERY CO., Bloomington, Ill.: Wholesale catalogue of trees, plants, shrubs, roses, bulbs, etc., of the Bloomington Phœnix Nursery.

GEO. H. POUNDER, Ft. Atkinson, Wis.: Illustrated circulars of Pounder's patent harrow.

E. W. REID, Bridgeport, O.: Everything for the fruit grower. Illustrated. Berry baskets and gift crates a specialty.

WM. REID & LEYS, Aberdeen, Scotland: Catalogue of garden and flower seeds, garden implements and lawn mowers.

ROBERT C. REEVES & Co., 185 Water St., New York: Illustrated Descriptive Catalogue of Agricultural and Horticultural Implements, Machinery, Garden, Field and Flower Seeds and Fertilizers.

A. J. ROOT, Medina, O.: Bees and honey. Illustrated catalogue and price-list. 1893.

SANDWICH ENTERPRISE CO., Sandwich, Ill.: Descriptive circular of the Rose improved disk harrow.

ALTON M. SHEPHERD, Minneapolis, Minn.: Catalogue of small fruit plants grown at Vine Grove Fruit Farm.

C. C. SHOEMAKER, Freeport, Ill.: Illustrated, descriptive catalogue of pure-bred poultry. Colored engravings of choice breeds.

SLAYMAKER & SON, Dover, Del.: Descriptive, illustrated price-list of berry plants of all kinds. Crates and baskets.

WM. STAHL, Quincy, Ill.: Spraying fruits, how, when, where and why to do it. Illustrated catalogue of the Excelsior Spraying Outfits. Colored covers.

STOKES' MFG. CO., Chicago, Ill.: Illustrated price-list of bicycles.

WEBB & SONS, Wordsley, Stourbridge, England: Catalogue of Farm Seeds. A very fully illustrated large quarto pamphlet. Grass Seeds and Fertilizers a specialty.

Reviving Chilled Chicks.—R. Peters, Putnam Co., N. Y.: If a chicken has the misfortune to get drenched and chilled so that it is almost or sometimes even quite dead to appearance, it often can be brought about by the proper application of warmth. Take such a chicken and wrap it in cotton-batting or a bit of flannel, leaving the head only exposed, place it in the oven of the kitchen stove with the door open, to avoid roasting it, and, unless life has really been quenched, the chicken will revive. We have seen many apparently dead chickens thus restored to life, and have known them to grow into a profitable maturity.

Wants to Be Taken Back.—I have not seen the AMERICAN AGRICULTURIST for several years, but the sample copy just received makes me wish to be taken back into the family again. You look well, and the pages are full of more useful information than usual.

A. J. GRIFFIN, Summit Co., Ohio.

JUST PUBLISHED:

Market Gardening And Farm Notes.

EXPERIENCES AND OBSERVATIONS IN THE GARDEN AND FIELD,

—OF INTEREST TO THE—

Market and the Amateur Gardener, The Trucker and the Farmer.

By BURNET LANDRETH.

The most useful books are those written by men who have had **practical knowledge** of the **subjects treated. The author** of this much needed treatise is a **practical market gardener** and knows every detail of both garden and farm work. Although this work is entitled Market Gardening, the family gardener will, however, find all the instructions needed for gardening for pleasure as well as for profit.

A **novel feature** of the book is the calendar of farm and garden operations for each month of the year, indicating those which apply to each of the various sections and climates of North America. One chapter is devoted to the **grass question,** and discusses not only the problem of lawn grasses but also the questions which arise concerning the **best varieties or mixtures** for **temporary** or **permanent pastures** or meadows. The chapter on the **half-acre garden** will be read with **great interest** by the amateur, while the chapters on **seedsmen's novelties** and **responsibilities, manures** and **fertilizers, transplanting, succession** and **rotation** of **crops, celery** and **onion culture,** and the **packing, shipping** and **marketing of vegetables** will be **especially useful** to the professional market gardener.

There are detailed plans and **descriptions** for **hotbeds, cold frames** and **greenhouses.**

The **new** and **growing industry** of **gardening under glass** for **winter markets** is **treated** in a thorough and **business-like** way.

The farmers will find the chapters on **roots** for **stock feeding,** on **soils** and **fertilizers,** on **implements** and **store houses** of **special use** in their daily operations.

This timely volume is **an authority** on the kind of **gardening** for **market** and for **home** that gives **practical results.**

CONTENTS.

Chapter I. Market Gardening.
Chapter II. Location and Soils.
Chapter III. The Science of Gardening.
Chapter IV. Chemistry of the Garden.
Chapter V. Stable Manure, Compost and Commercial Fertilizers.
Chapter VI. Sowing Seeds.
Chapter VII. Germination.
Chapter VIII. Transplanting.
Chapter IX. Succession or the Rotation of Crops.
Chapter X. Garden Insects.
Chapter XI. Diseases of Garden Vegetables.
Chapter XII. Heredity in Plants.
Chapter XIII. Saving Seed.
Chapter XIV. Seedsmen's Novelties and Responsibilities.
Chapter XV. Weeds.
Chapter XVI. Hotbeds and Cold Frames.
Chapter XVII. Market Gardening Under Glass.
Chapter XVIII. Celery.
Chapter XIX. Onion Culture.
Chapter XX. Mushroom Culture.
Chapter XXI. Roots for Stock Feeding.
Chapter XXII. Packing and Shipping Vegetables.
Chapter XXIII. Implements for the Farm and Garden.
Chapter XXIV. A Half-Acre Garden.
Chapter XXV. Calendar Indicating Operations for the Northern and Southern States.
Chapter XXVI. The Grass Question.

215 pp., 12mo., Cloth. Price, postpaid, $1.00.

ORANGE JUDD CO., 52 & 54 Lafayette Place, New York.

No. 87. A COLUMBUS SOUVENIR.

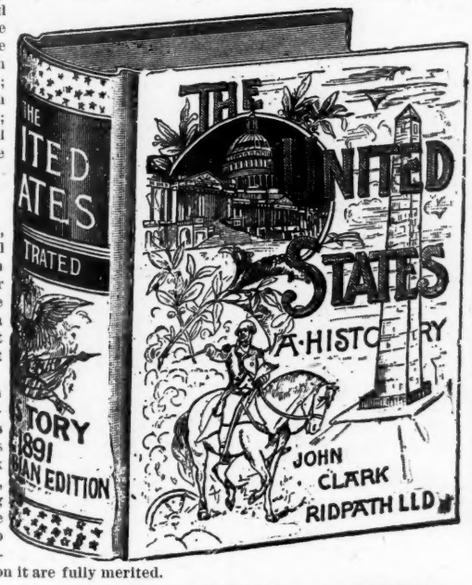
A History of the United States.

COLUMBIAN EDITION; By RIDPATH.

Regular price $4.00. Our price $3.00, express paid, which includes the American Agriculturist one year.

Given for Four New Subscribers.

Profusely illustrated with Maps, Charts, Sketches, Portraits and Diagrams. A Handsome Octavo Volume, with over 800 pages. This is the most complete and the most popular History of the United States of America from the Aboriginal Times to the Present Day, embracing: An Account of the Aborigines; Norsemen in the New World; the Discoveries of the Spaniards, English and French; the Planting of Settlements; the Growth of the Colonies; the Struggle for Liberty in the Revolution; the Establishment of the Union, down to the Inauguration of President Harrison; the Development of the Nation; the Civil War. Magnificently illustrated in colors with flags of all nations and the portraits of all the Presidents; the seals of all the States, and numerous beautiful engravings describing the growth and development of the nation.



WHY YOU SHOULD READ IT.

The World's Fair, the most stupendous exhibition, national or international, ever made by any country, will be thrown open in 1893 for the inspection and instruction of all nations. It will mark an important era in our national life, therefore, it behooves every one to become familiar with the history of our marvelous progress as a people, and with our country's development from the first settlers down to the crowning glory of our prosperity at the close of the nineteenth century.

Never before has there been published a book so rich in historical incident, so instructive in its method of presentation, and so **brilliant and fascinating in its narrative;** and never has there been a time when it was so necessary that an American citizen should look back and trace the progress of his country from its early, humble beginnings, to its present proud position among the foremost nations of the globe. But the book must be seen and read to be properly appreciated. All who improve the opportunity to secure a copy, will be convinced that the many encomiums so freely bestowed upon it are fully merited.

The very many beautiful illustrations, made especially for this work, constitute one of its chief attractions. There are, likewise, **numerous large maps,** giving the geography of the country at different periods of its history; a large number of portraits of the leading men of the country, from William Penn down to President Harrison, and charts and diagrams which impart information and greatly assist the reader to an understanding of the work. These illustrations are one of its best and most important features.

This history is remarkable for its conciseness. In this respect it has an advantage over Bancroft's, or any of the other large histories of the United States. The style of the author is at the same time both plain and fascinating. In this respect it is adapted to the ordinary reader. No subject is overlooked; just enough is said upon each topic, and all is presented in such a **clear and brilliant** manner that the attention and interest of the reader are constantly secured.

This Great History has received the most emphatic indorsement from the best educated men in the land. Chancellor Sims, of Syracuse University; ex-President White, of Cornell University; Prof. Churchill, of Oberlin College; Prof. H. S. Tarbell, Supt. of Schools, Indiana; Prof. Edwards of McKendree College; Dr. Buckley, editor of "Christian Advocate," and many others of the same class, have given testimonials, in which they speak in the highest terms of this work as the most concise, the most spirited, the most instructive, the cheapest, and, on the whole, **the best American History** ever published.

The Volume, which is Octavo in size, is printed on the very best paper, and in large, clear, bold type, which can be read with the greatest ease. It numbers over eight hundred pages, and some idea as to the capacity of the volume may be derived from the fact that it weighs about 6 pounds, is 10 inches long, 7 inches wide and 3 inches in thickness.

A WONDERFUL OFFER

We will mail this great work, express paid, on receipt of **only $3.00,** including the **AMERICAN AGRICULTURIST** one year. Given for 4 new yearly subscribers at **$1.00** each, express paid.

* ICE CREAM IN 30 SECONDS! *

A FEW OF THE MANY ADVANTAGES THE

"JACK FROST"

HAS OVER THE OLD STYLE FREEZER.

Economy of Ice--Economy of Salt--Economy of Time--Economy of Labor.
A child can operate It.

No. 1.—Capacity	**1**	**Pint to**	**2**	**Quarts,**	**$3.75.**	**Given for**	**5**	**new yearly subscriptions at**					**$1.00**	**each.**
" 2.— "	1	"	4	"	4.50.	"	6	"	"	"	"	"	"	"
" 3.— "	1 Qt.	"	6	"	5.50.	"	7	"	"	"	"	"	"	"
" 4.— "	1	"	8	"	6.50.	"	8	"	"	"	"	"	"	"

It makes the **best, quickest** and **cheapest dessert.** You can freeze your cream in the warm kitchen as quickly as in the cold woodshed or cellar. **Simplicity** of **construction,** there being no cog wheels or gearing to break or get out of order, and no iron hoops to get loose.

Positive freedom from **danger** of **metallic poisoning,** there being **no metal bearings.** The only bearings are on the sides of the wooden box.

The machine is an ornament in the dining room, and you can make and serve ice cream or sherbert as quickly as you can pour a cup of tea.

It is impossible for the **salt water** or ice to leak or come in contact with the cream, as the opening of the cylinder is outside of the box and the machine is not mussy or sloppy.

It is a scientific machine, made on scientific principle, which **stores** and **uses every particle** of **cold** produced by the chemical action of the salt on the ice; whereas in the old style freezer ninety per cent. of the cold is lost, radiating away from the cylinder, only ten per cent going to freeze the cream.

The **JACK FROST FREEZER** is constructed on an entirely *new principle.* Instead of having the ice and salt outside of the can containing the cream—the cream is on the outside and the ice and salt are inside.

TO MAKE ICE CREAM—First fill the cylinder with ice and salt and pound the wooden stopper in tight, as in a milk can, pour the prepared cream into the flat pan which is in place in the back part of the box, then lay the cylinder in the sockets cut for it in the sides of the box. This brings the under side of the cylinder in contact with the cream in the pan, and, when the receiving pan has been put in place next to the cylinder, the crank attached, and the cylinder revolved *slowly* through the cream, the ice cream is deposited on the cylinder. If desired it can be made to scrape off into the front pan as the cylinder is turned, and then repacked in any form desired.

A WONDERFUL OFFER.

We include the AMERICAN AGRICULTURIST one year to each purchaser of the Jack Frost Freezer, charging only the regular selling price of the machine. You may order any size desired. We will also furnish the Freezers as premiums to any present subscriber sending us the required number of new subscriptions at the club rate of $1 per year as given above, the receiver to pay express charges whether purchased or taken as a premium.

Address all orders to

The American Agriculturist, 52 and 54 Lafayette Place, New York.

= STANDARD RURAL BOOKS. =

Mushrooms. How to Grow Them.

For home use fresh Mushrooms are a delicious, highly nutritious and wholesome delicacy; and for market they are less bulky than eggs, and, when properly handled, no crop is more remunerative. Anyone who has an ordinary house cellar, woodshed, or barn can grow Mushrooms. This is the most practical work on the subject ever written, and the only book on growing Mushrooms ever published in America. The whole subject is treated in detail, minutely and plainly, as only a practical man, actively engaged in Mushroom growing, can handle it. The author describes how he himself grows Mushrooms,and how they are grown for profit by the leading market gardeners, and for home use by the most successful private growers. The book is amply and pointedly illustrated, with engravings drawn from nature expressly for this work. By Wm. Falconer. Is nicely printed and bound in cloth. Price, postpaid.....1.50

Allen's New American Farm Book.

The very best work on the subject; comprising all that can be condensed into an available volume. Originally by Richard L. Allen. Revised and greatly enlarged by Lewis F. Allen. Cloth, 12mo 2.50

Henderson's Gardening for Profit.

By Peter Henderson. New edition. Entirely rewritten and greatly enlarged. The standard work on Market and Family Gardening. The successful experience of the author for more than thirty years, and his willingness to tell, as he does in this work, the secret of his success for the benefit of others, enables him to give most valuable information. The book is profusely illustrated. Cloth, 12mo.....2.00

Fuller's Practical Forestry.

A treatise on the Propagation, Planting, and Cultivation, with a description and the botanical and proper names of all the indigenous trees of the United States, both Evergreen and Deciduous, with Notes on a large nmuber of the most valuable Exotic Species. By Andrew S. Fuller, author of "Grape Culturist," "Small Fruit Culturist," etc.....1.50

The Dairyman's Manual.

By Henry Stewart, author of "The Shepherd's Manual," "Irrigation," etc. A useful and practical work by a writer who is well known as thoroughly familiar with the subject of which he writes. Cloth, 12mo.....2.00

Truck Farming at the South.

A work giving the experience of a successful grower of vegetables or "grain truck" for Northern markets. Essential to any one who contemplates entering this promising field of Agriculture. By A. Oemler, of Georgia. Illustrated. Cloth, 12mo. 1.50

Harris on the Pig.

New edition. Revised and enlarged by the author. The points of the various English and American breeds are thoroughly discussed, and the great advantage of using thoroughbred males clearly shown. The work is equally valuable to the farmer who keeps but few pigs, and to the breeder on an extensive scale. By Joseph Harris. Illustrated. Cloth, 12mo. 1.50

Henderson's Practical Floriculture.

By Peter Henderson. A guide to the successful propagation and cultivation of florists' plants. The work is not one for florists and gardeners only, but the amateur's wants are constantly kept in mind, and we have a very complete treatise on the cultivation of flowers under glass or in the open air, suited to those who grow flowers for pleasure as well as those who make them a matter of trade. The work is characterized by the same radical common sense that marked the author's "Gardening for Profit," and it holds a high place in the estimation of lovers of agriculture. Beautifully illustrated. New and enlarged edition. Cloth, 12mo.....1.50

Harris's Talks on Manures.

By Joseph Harris, M. S., author of "Walks and Talks on the Farm," "Harris on the Pig," etc. Revised and enlarged by the author. A series of familiar and practical talks between the author and the deacon, the doctor, and other neighbors, on the whole subject of manures and fertilizers; including a chapter specially written for it by Sir John Bennet Lawes, of Rothamsted, England. Cloth, 12mo.....1.75

Waring's Draining for Profit and Draining for Health.

This book is a very complete and practical treatise, the directions in which are plain, and easily followed. The subject of thorough farm drainage is discussed in all its bearings, and also that more extensive land drainage by which the sanitary condition of any district may be greatly improved, even to the banishment of fever and ague, typhoid and malarious fever. By Geo. E. Waring, Jr. Illustrated, Cloth, 12mo.....1.50

The Practical Rabbit-Keeper.

By Cuniculus. Illustrated. A comprehensive work on keeping and raising Rabbits for pleasure as well as for profit. The book is abundantly illustrated with all the various Courts, Warrens, Hutches, Fencing, etc., and also with excellent portraits of the most important species of rabbits throughout the world. 12mo. 1.50

Quinby's New Bee-Keeping.

The Mysteries of Bee-Keeping Explained. Combining the results of Fifty Years' Experience, with the latest discoveries and inventions, and presenting the most approved methods, forming a complete work. Cloth, 12mo.....1.50

Profits in Poultry.

Useful and Ornamental Breeds and their Profitable Management. This excellent work contains the combined experience of a number of practical men in all departments of poultry raising. It is profusely illustrated and forms an unique and important addition to our poultry literature. Cloth, 12mo. 1.00

Stewart's Shepherd's Manual.

A Valuable Practical Treatise on the Sheep, for American farmers and sheep growers. It is so plain that a farmer, or a farmer's son, who has never kept a sheep, may learn from its pages how to manage a flock successfully, and yet so complete that even the experienced shepherd may gather many suggestions from it. The results of personal experience of some years with the characters of the various modern breeds of sheep, and the sheep-raising capabilities of many portions of our extensive territory and that of Canada—and the careful study of the diseases to which our sheep are chiefly subject, with those by which they may eventually be afflicted through unforeseen accidents—as well as the methods of management called for under our circumstances, are here gathered. By Henry Stewart. Illustrated. Cloth, 12mo.....1.50

Allen's American Cattle.

Their History, Breeding and Management. By Lewis F. Allen. This Book will be considered indispensable by every breeder of live stock. The large experience of the author in improving the character of American herds adds to the weight of his observations, and has enabled him to produce a work which will at once make good his claims as a standard authority on the subject. New and revised edition. Illustrated. Cloth, 12mo 2.50

Fuller's Grape Culturist.

By A. S. Fuller. This is one of the very best of works on the culture of the hardy grapes, with full directions for all departments of propagation, culture, etc., with 150 excellent engravings, illustrating planting, training, grafting, etc. Cloth, 12mo.....1.50

White's Cranberry Culture.

CONTENTS:—Natural History.—History of Cultivation.—Choice of Location.—Preparing the Ground.—Planting the Vines.—Management of Meadows.—Flooding.—Enemies and Difficulties Overcome.—Picking.—Keeping.—Profit and Loss.—Letters from Practical Growers.—Insects Injurious to the Cranberry. By Joseph J. White. A practical grower. Illustrated. Cloth, 12mo. New and revised edition.....1.25

Herbert's Hints to Horse-Keepers.

This is one of the best and most popular works on the Horse in this country. A Complete Manual for Horsemen, embracing: How to Breed a Horse; How to Buy a Horse; How to Break a Horse; How to Use a Horse; How to Feed a Horse; How to Physic a Horse (Allopathy or Homœpathy); How to Groom a Horse; How to Drive a Horse; How to Ride a Horse, etc. By the late Henry William Herbert (Frank Forester). Beautifully illustrated. Cloth, 12mo.....1.75

Barry's Fruit Garden.

By P. Barry. A standard work on fruit and fruit trees; the author having had over thirty years' practical experience at the head of one of the largest nurseries in this country. New edition, revised up to date. Invaluable to all fruit growers. Illustrated. Cloth, 12mo.....2.00

The Propagation of Plants.

By Andrew S. Fuller. Illustrated with numerous engravings. An eminently practical and useful work. Describing the process of hybridizing and crossing species and varieties, and also the many different modes by which cultivated plants may be propagated and multiplied. Cloth, 12mo.....1.50

Keeping one Cow.

A collection of Prize Essays, and selections from a number of other Essays, with editorial notes, suggestions, etc. This book gives the latest information, and in a clear and condensed form, upon the management of a single Milch Cow. Illustrated with full-page engravings of the most famous dairy cows. Recently published. Cloth, 12mo.....1.00

Law's Veterinary Adviser.

A Guide to the Prevention and Treatment of Diseases in Domestic Animals. This is one of the best works on this subject, and is especially designed to supply the need of the busy American Farmer, who can rarely avail himself of the advice of a Scientific Veterinarian. It is brought up to date and treats of the Prevention of Disease, as well as of the Remedies. By Prof. Jas. Law. Cloth, Crown 8vo.....3.00

Guenon's Treatise on Milch Cows.

A Treatise on the Bovine Species in General. An entirely new translation of the last edition of this popular and instructive book. By Thos. J. Hand, Secretary of the American Jersey Cattle Club. With over 100 illustrations, especially engraved for this work. Cloth, 12mo.....1.00

The Cider Maker's Handbook.

A complete guide for making and keeping pure cider, By J. M. Trowbridge. Fully illustrated. Cloth, 12mo.....1.00

Long's Ornamental Gardening for Americans.

A treatise on Beautifying Homes, Rural Districts, and Cemeteries. A plain and practical work at a moderate price, with numerous illustrations, and instructions so plain that they may be readily followed. By Elias A. Long. Landscape Architect. Illustrated. Cloth, 12mo.....2.00

The Dogs of Great Britian, America and other Countries.

New, enlarged and revised edition. Their breeding, training and management, in health and disease; comprising all the essential parts of the two standard works on the dog, by "Stonehenge," thereby furnishing for $2 what once cost $11.25. Contains Lists of all Premiums given at the last Dog Shows. It Describes the Best Game and Hunting Grounds in America. Contains over One Hundred Beautiful Engravings, embracing most noted Dogs in both Continents, making together, with Chapters by American Writers, the most Complete Dog Book ever published. Cloth, 12mo.....2.00

Batty's Practical Taxidermy and Home Decoration.

By Joseph H. Batty, taxidermist for the government surveys and many colleges and museums in the United States. An entirely new and complete as well as authentic work on taxidermy—giving in detail full directions for collecting and mounting animals, birds, reptiles, fish, insects, and general objects of natural history. 125 illustrations. Cloth, 12mo.....1.50

Stewart's Irrigation for the Farm, Garden and Orchard.

New and Enlarged Edition. This work is offered to those American Farmers, and other cultivators of the soil, who from painful experience can readily appreciate the losses which result from the scarcity of water at critical periods. By Henry Stewart. Fully illustrated. Cloth, 12mo.....1.50

Johnson's How Crops Grow.

New Edition, entirely rewritten. A Treatise on the Chemical Composition, Structure, and Life of the Plant. This book is a guide to the knowledge of agricultural plants, their composition, their structure, and modes of development and growth; of the complex organization of plants, and the use of the parts; the germination of seeds, and the food of plants obtained both from the air and the soil. The book is an invaluable one to all real students of agriculture. With numerous illustrations and tables of analyses. By Prof. Samuel W. Johnson, of Yale College. Cloth, 12mo.....2.00

Johnson's How Crops Feed.

A treafise on the Atmosphere and the Soil, as related in the Nutrition of Agricultural Plants. The volume—the companion and complement to "How Plants Grow,"—has been welcomed by those who appreciate scientific aspects of agriculture. Illustrated by Prof. Samuel W. Johnson. Cloth, 12mo.....2.00

Warington's Chemistry of the Farm.

Treating with the utmost clearness and conciseness, and in the most popular manner possible, of the relations of Chemistry to Agriculture, and providing a welcome manual for those, who, while not having time to systematically study Chemistry, will gladly have such an idea as this gives them of its relation to operations on the farm. By R. Warington, F. C. S. Cloth, 12mo 1.00

The American Merino. For Wool or for Mutton.

A practical and most valuable work on the selection, care, breeding, and diseases of the Merino sheep, in all sections of the United States. It is a full and exhaustive treatise upon this one breed of sheep. By Stephen Powers. Cloth, 12mo..1.50

Hunter and Trapper.

The best modes of Hunting and Trapping are fully explained, and Foxes, Deer, Bears, etc., fall into his traps readily by following his directions. By Halsey Thrasher, an old and experienced sportsman. Cloth, 12mo.....75

French's Farm Drainage.

The Principles, Process, and Effects of Draining Land, with Stones, Wood, Ditch-plows, Open Ditches, and especially with Tiles; including Tables of Rainfall, Evaporation, Filteration, Excavation, Capacity of Pipes, cost and number to the acre. By Judge French, of New Hampshire. Cloth, 12mo.....1.50

Armatage's Every Man His Own Horse Doctor.

By Prof. George Armatage, M. R. C. V. S. A valuable and comprehensive guide for both the professional and general reader with the fullest and latest information regarding all diseases, local injuries, lameness, operations, poisons, the dispensatory, etc., etc., with practical anatomical and surgical illustrations. New Edition. Together with Blaine's "Veterinary Art," and numerous recipes. One large 8vo. volume, 830 pages, half morocco.....7.50

Dadd's Modern Horse Doctor.

Containing Practical Observations on the Causes, Nature, and Treatment of Diseases and Lameness of Horses—embracing recent and improved Methods, according to an enlightened system of Veterinary Practice, for Preservation and Restoration of Health. Illustrated. By Geo. H. Dadd, M. D. V. S. Cloth, 12mo.....1.50

The Family Horse.

Its Stabling, Care, and Feeding. By Geo. A. Martin. A Practical Manual, full of the most useful information. Illustrated. Cloth, 12mo.....1.00

Sander's Horse Breeding.

Being the general principles of Heredity applied to the Business of Breeding Horses and the Management of Stallions, Brood Mares and Foals. The book embraces all that the breeder should know in regard to the selection of stock, management of the stallion, brood mare, and foal, and treatment of diseases peculiar to breeding animals. By J. H. Sanders. 12mo, cloth. 2.00

Coburn's Swine Husbandry.

New, revised and enlarged edition. The Breeding, Rearing and Management of Swine, and the Prevention and Treatment of their Diseases. It is the freshest and fullest compendium relating to Swine Breeding yet offered. By F. D. Coburn. Cloth, 12mo.....1.75

Dadd's American Cattle Doctor.

By George H. Dadd, M. D., Veterinary Practitioner. To help every man to be his own cattle-doctor; giving the necessary information for preserving the health and curing the diseases of oxen, cows, sheep, and swine, with a great variety of original recipes, and valuable information on farm and dairy management. Cloth, 12mo.....1.50

Treat's Injurious Insects of the Farm and Garden. By Mrs. Mary Treat.

An original investigator who has added much to our knowledge of both Plants and Insects, and those who are familiar with Darwin's works are aware that he gives her credit for important observation and discoveries. New and Enlarged Edition. With an Illustrated Chapter on Beneficial Insects. Fully Illustrated. Cloth, 12mo.....2.00

Barn Plans and Outbuildings.

Two Hundred and Fifty-seven illustrations. A most Valuable Work, full of Ideas, Hints, Suggestions, Plans, etc., for the Construction of Barns and Outbuildings, by Practical writers. Chapters are devoted, among other subjects, to the Economic Erection and Use of Barns, Grain Barns, House Barns, Cattle Barns, Sheep Barns, Corn Houses, Smoke Houses, Ice Houses, Pig Pens, Granaries, etc. There are likewise chapters upon Bird Houses, Dog Houses, Tool Sheds, Ventilators, Roofs and Roofing, Doors and Fastenings Work Shops, Poultry Houses, Manure Sheds, Barn Yards, Root Pits, etc. Recently published. Cloth, 12mo.....1.50

Fuller's Small Fruit Culturist.

By Andrew S. Fuller. Rewritten, enlarged and brought fully up to the present time. The book covers the whole ground of propagating small fruits, their culture, varieties, packing for market, etc. It is very finely and thoroughly illustrated, and makes an admirable companion to "The Grape Culturist," by the same well known author.....1.50

Parsons on the Rose.

By Samuel B. Parsons. A treatise on the propagation, culture, and history of the rose. New and revised edition. In his work upon the rose, Mr. Parsons has gathered up the curious legends concerning the flower, and gives us an idea of the esteem in which it was held in former times. A simple garden classification has been adopted, and the leading varieties under each class enumerated and briefly described. The chapters on multiplication, cultivation, and training are very full, and the work is altogether one of the most complete before the public. Illustrated. Cloth, 12mo.....1.00

Husmann's American Grape-Growing and Wine-Making.

By George Husmann of Talcoa vineyards, Napa, California. New and enlarged edition. With contributions from well-known grape-growers, giving a wide range of experience. The author of this book is a recognized authority on the subject. Cloth, 12mo 1.50

The Scientific Angler.

A general and instructive work on Artistic Angling, by the late David Foster. Compiled by his Sons. With an Introductory Chapter and Copious Foot Notes, by William C. Harris, Editor of the "American Angler." Cloth, 12mo.....1.50

Fulton's Peach Culture.

This is the only practical guide to Peach Culture on the Delaware Peninsula, and is the best work upon the subject of peach growing for those who would be successful in that culture in any part of the country. It has been thoroughly revised and a large portion of it rewritten, by Hon. J. Alexander Fulton, the author, bringing it down to date. Cloth, 12mo. 1.50

Armatage's Every Man His Own Cattle Doctor.

The Veterinary Cyclopedia—Embracing all the practical information of value heretofore published on the Diseases of Cattle, Sheep, and Swine, together with the latest and best information regarding all known diseases up to the present time. Compiled and edited by that eminent authority, Prof. George Armatage, M. R. C. V. S. One large octavo volume, 894 pages, with upwards of 350 practical illustrations, showing forms of disease and treatment. Half morocco.....7.50

Reed's House Plans for Everybody.

By S. B. Reed. This useful volume meets the wants of persons of moderate means, and gives a wide range of design, from a dwelling costing $250 up to $8,000, and adapted to farm, village and town residences. Nearly all of these plans have been tested by practical workings. One feature of the work imparts a value over any similar publication of the kind that we have seen. It gives an estimate of the quantity of every article used in the construction, and the cost of each article at the time the building was erected or the design made. Even if prices vary from time to time, one can, from these data, ascertain within a few dollars the probable cost of constructing any one of the buildings here presented. Profusely illustrated. Cloth, black and gold, 12mo.....1.50

Stewart's Feeding Animals.

By Elliot W. Stewart. A new and valuable practical work upon the laws of animal growth, especially applied to the rearing and feeding of horses, cattle, dairy cows, sheep and swine. Illustrated. Cloth, 12 mo.....2.00

How to Co-operate.

A Manual for Co-operators. By Herbert Myrick. This book describes the how rather than the wherefore of co-operation. In other words it tells how to manage a co-operative store, farm or factory, and co-operative dairying, banking and fire insurance, and co-operative farmers' and women's exchanges for both buying and selling. The directions given are based on the actual experience of successful co-operative enterprises in all parts of the United States. The character and usefulness of the book commend it to the attention of all men and women who desire to better their condition. 12mo. Cloth, 1.00 paper.....50

To Purchasers of any One or More of the above books: By adding $1 to the price of books we will furnish the AMERICAN AGRICULTURIST one year, all postpaid.

ORANGE JUDD CO., - - 52 and 54 Lafayette Place, NEW YORK.

Protect Our Forests!

A TIMELY BOOK = = = NOW READY.

FOREST PLANTING

A Treatise on the Care of Timber-Lands and the Restoration of Denuded Wood-Lands on Plains and Mountains.

By NICHOLAS JARCHOW, LL. D. ILLUSTRATED.

This publication is a timely and valuable contribution to our knowledge of forest planting, which in this country is just beginning to receive the attention which its importance demands. The reckless destruction of our magnificent woods makes it not only necessary that the remaining natural forests may be preserved, but that the cleared woodlands may be replanted and the original forest covering be restored. The author believes that this can be acomplished only by a thoroughly systematic and scientific forest culture adapted to American conditions. This practical work is prepared with this end in view. Other writers on forestry have mostly confined themselves to the treatment of forest trees as single trees and not as masses of timber raised for the purpose of producing periodical crops of wood or lumber. They held that forestry was the art of tree planting in order to create new forests on regions previously bare of trees, and that, as we are still in the possession of many large and natural forests, the restoration of old forests was to us unnecessary. The author believes that it is a much better and cheaper policy to preserve our natural forests than to utterly destroy them, and afterward to create at an enormous expense and loss of time such artificial forests as European countries find it necessary to maintain. However, as in the preservation of forests there is no difference in the treatment whether they have been originated by nature or by human art, both being subject to the same dangers and injuries, the author has fully described those European methods which have proved to be most useful in maintaining the superb forests of the old world. This experience has been adapted to the different climates and trees of America, full instructions being given for forest planting on our various kinds of soil and sub-soil, whether on mountain or valley. There is no other publication which covers this field, and the work is destined to become the standard authority on the maintenance of forests.

CONTENTS

Part I. Florest Culture.

CHAPTER I—Introductory Remarks.
CHAPTER II—Importance of Forest Culture.
CHAPTER III—Proportion of the Wooded Lands of a Country to its Total Area.
CHAPTER IV—Relations of the Government to Forests—Protective Forests.
CHAPTER V—Governmental Assistance to Forest Culture—Establishment of Forest Schools for Training Foresters.
CHAPTER VI—Forest Planting-Preparatory and Precautionary Measures.
CHAPTER VII—Methods of Culture and their Success.
CHAPTER VIII—Cultivation of the Soil.
CHAPTER IX—Drainage and Irrigation.
CHAPTER X—Selection of Trees.
CHAPTER XI—The Various Systems of Forest Management.
CHAPTER XII—Raising Forest Trees by Natural Reproduction.
CHAPTER XIII The Collection and Treatment of Seeds for Forest Trees.
CHAPTER XIV—Raising Forest Trees by Artificial Reproduction. A. Seeding.
CHAPTER XV—B. Planting.
CHAPTER XVI—The Care of Young Plantations.
CHAPTER XVII—Protection of Forests Against Animals and Elemental Forces.
CHAPTER XVIII—The Conversion of the Wild or Natural Woods into Cultivated Forests—What the American Forester Should do Next.

Part II. Forest Planting on Plains.

CHAPTER I—Forest Planting on Lands with Alluvial Soil.
CHAPTER II—Forest Planting on Marshy or Swampy Soil.
CHAPTER III—Forest Planting on Moorlands.
CHAPTER IV—Forest Planting on High Moors.
CHAPTER V—Drainage.
CHAPTER VI—Burning Over the Soil for Cultivation,
CHAPTER VII—Forest Planting on Sand Wastes or Pine Barrens.
CHAPTER VIII—Forest Planting on Inland Sand Drifts.
CHAPTER IX—Covering Downs or Sand Dunes on the Sea Coast with Trees and Shrubs, with Diagrams.

Part III. Forest Planting on Mountains.

CHAPTER I—The Object of Covering Mountains with Forest Trees.
CHAPTER II—Selection of Trees—Replanting Forests on Mountains—Planting or Seeding.
CHAPTER III—Restoring Denuded Woodlands on Mountains—Preparatory and Protective Measures—With Diagrams.
CHAPTER IV—How to Arrest and Bind the Shifting Sand on Mountains.
CHAPTER V—Replanting Forests on Mountains of the Sandstone Formation.
CHAPTER VI—Replanting Forests on Mountains on the Limestone Formation.
CHAPTER VII—Restocking Mountains Having Rocky Surfaces.
CHAPTER VIII—Restocking Denuded Woodlands on High Mountains.
CHAPTER IX—Concluding Remarks. 1. State Forest Nursery. 2. Forest School in the Adirondacks. 3. Forest Experiment Station. 4. Asylum for Game to Rest and Breed.

250 Pages, 12mo., Cloth, Illustrated. Price Postpaid, $1.50.

MAKE YOUR COWS PAY.

READ DAIRYING FOR PROFIT.

By MRS. E. M. JONES, The Famous Dairy Woman.

—WITH CHAPTERS ON—

Choosing a Cow,
Points of a Good Milker,
The Best Rations and How to Feed,
The Proper Care of a Cow,
What a Cow Should Do in One Year.
The Best Butter Breeds,
How to Maintain the Standard and Improve the Breed,
Milking and Skimming,
Setting Milk,
Creamers, Separators,
Churns and Churning,
Butter Workers,
The Old Bowl and Ladle,
Coloring, Salting, Printing,
Preparing for Market,
Method of Marketing the Printed Butter of Gilt-Edge Dairies,
Butter Boxes for Small Lots,
Some Mistakes,
The Man who Follows His Grandmother,
Care of Dairy Utensils,
Dairy Accounts,
A Model Dairy and Dairy Farm.

Gilt Embossed Covers. Illustrated, 8vo. Price, Postpaid, 30 Cents.

Book-Keeping for Farmers.

A TREATISE ON FARM ACCOUNTS.

By T. CLARK ATKESON, Ph. D., L.L. B.,

Professor of Agriculture at the West Virginia University, and President of the West Virginia State Board of Agriculture.

—TO WHICH IS ADDED—

THE STOCKBRIDGE SYSTEM OF ACCOUNTS.

Edited by HERBERT MYRICK.

The keeping of accurate accounts is indispensable to complete success in farming. Without them the farmer can never see just where he stands, or whether he is making or losing money.

The farmer should keep accounts as a matter of ECONOMY and SATISFACTION. It is the only way in which farming can be made profitable. Guesswork cannot be depended upon to insure success. The methods outlined in this pamphlet are so simple that any person having a fair knowledge of arithmetic can keep the farm records so that he will know what each product has cost him, and which crop and line of farming is paying the best. A glance at the accounts will show the gain or loss after adopting the valuable plan, plainly and concisely described in this book.

12mo., Paper. Price, 25 Cents, postpaid.

Address,

ORANGE JUDD CO., 52 and 54 Lafayette Place, New York.

= = = STANDARD RURAL BOOKS. = = =

Purchaser of any One or More of these books: By adding $1 to the price of books, amounting to not less than $1, we will furnish the American Agriculturist one year all postpaid.

Flax Culture.
Full directions for preparation and marketing of crops 8vo. Illustrated.....30

Gregory on Fertilizers.
Where to get them in the Cheapest Form. How to Compound Formulas, etc. 12mo.....40

Henderson's Gardening for Profit.
By Peter Henderson. The standard work on Market and Family Gardening. Cloth, 12mo.....2.00

Henderson's Gardening for Pleasure.
Meets the wants of all classes, in country, city and village who keep a garden for their own enjoyment rather than for the sale of products. By Peter Henderson. Finely illustrated. Cloth, 12mo.....2.00

Quinn's Money in the Garden.
By P. T. Quinn. The kitchen garden, market garden, and field culture, from successful practical experience. Illustrated. Cloth, 12mo.....1.50

E. P. Roe's Play and Profit in My Garden.
The author takes us to his garden and shows us how he evoked a profit of $1,000 while carrying on pastoral and literary labor. Cloth, 12mo.....1.50

Treat's Injurious Insects of the Farm and Garden. By Mrs. Mary Treat.
With an additional Chapter on Beneficial Insects. Illustrated. Cloth, 12mo.....2.00

Johnson's How Crops Grow.
A Treatise on the Chemical Composition, Structure and Life of the Plant. By Prof. Samuel W. Johnson of Yale College. Illustrated. Cloth, 12mo.....2.00

Johnson's How Crops Feed.
A Treatise on the Atmosphere, the Soil and the Nutrition of Agricultural Plants. By Prof. Samuel W. Johnson. Illustrated. Cloth, 12mo.....2.00

Asparagus Culture.
The Best Methods. By James Barnes and William Robinson.....50

Broom Corn and Brooms.
Raising Broom-Corn and Making Brooms on a Small or Large Scale. Illustrated. 12mo. Cloth.....50

Gregory on Cabbages; How to Grow Them.
A Practical treatise on Cabbage Culture, giving full details. By Jas. J. H. Gregory. 12mo.....30

Cauliflowers and How to Grow Them.
Plain, Practical and Explicit Directions for Cultivation, Management and Marketing. By Francis Brill.....20

Waring's Draining for Profit and Health.
The directions are plain and easily followed, and land drainage may be greatly improved, even to the banishment of fever and ague, typhoid and malarial fever. By Geo. E. Waring, Jr. Illustrated. Cloth, 12mo.....1.50

Allen's New American Farm Book.
The very best work on the subject. By Richard L. Allen. Revised and greatly enlarged by Lewis F. Allen. Cloth, 12mo. Illustrated.....2.50

Our Farm of Four Acres, and the money we made by it.
Many useful suggestions with the interest of a romance. Paper cover, 12mo.....30

Fuller's Practical Forestry.
Propagation, Planting and Cultivation, with a description and the botanical and proper names of Evergreen and Deciduous, and a number of the most valuable Exotic Species. By Andrew S. Fuller. Illustrated. Cloth.....1.50

How to Plant and What to Do with the Crops.
Valuable hints for the Farm, Garden and Orchard. By Mark W. Johnson. Illustrated.....50

Hop Culture.
Plain directions. Edited by A. S. Fuller. Forty engravings.....30

Sweet Potato Culture.
Full instructions from starting the plants to harvesting and storing the crop. With a chapter on the Chinese Yam. By James Fitz. Cloth, 12mo.....60

Insects and Insecticides.
Noxious Insects and Methods of Preventing their Injuries. By Clarence M. Weed, D. Sc., New Hampshire. College of Agriculture. Illustrated. Cloth, 8vo.....1.25

Dadd's American Cattle Doctor.
By George H. Dadd, M. D. The necessary information for preserving the health and curing the disease of oxen, cows, sheep and swine. Cloth, 12mo.....1.50

Allen's American Cattle.
Their History, Breeding, and Management. By Lewis F. Allen. Illustrated. Cloth, 12mo.....2.50

The New Onion Culture.
By B. T. Grenier. Valuable to every one who raises onions. 12mo.....50

Onions: How to Raise them Profitably.
Practical Details by Seventeen Onion Growers. 8vo...20

Gregory on Onion Raising.
What kinds to raise, and the way to raise them. By J. J. H. Gregory. Paper, 12mo.....30

Jones' Peanut Plant; Its Cultivation and Uses.
Instructing the beginner how to raise good crops of Peanuts. By B. W. Jones.....50

The A B C of Potato Culture.
By W. B. Terry. Latest improvements in this branch of agriculture.....40

Potato Pests.
The most complete account of the Colorado Beetle. By Prof. C. V. Riley.....50

Silos, Ensilage, and Silage.
A practical Treatise containing authentic information. By Manly Miles, M. D., F. R. M. S. Illustrated. Cloth, 12mo.....50

Gregory on Squashes.
A Treatise which no Farmer or Gardener ought to be without. By J. J. H. Gregory. 12mo.....30

Tobacco Culture: Full Practical Details.
Full details of every process by Fourteen Tobacco Growers. Illustrations. 8vo.....25

Truck Farming at the South.
Essential to any one who contemplates entering this promising field of Agriculture. By A. Oemler of Georgia. Illustrated, cloth, 12mo.....1.50

Wheat Culture.
How to double the yield and increase the profits. By D. S. Curtiss, Washington, D. C. Illustrated. 12mo...50

Bailey's Field Notes on Apple Culture.
By Prof. L. H. Bailey, Jr. A useful and thoroughly practical book. Cloth, 12mo.....75

The Cider Maker's Handbook.
A complete guide for making and keeping pure cider. By J. M. Trowbridge. Illustrated. Cloth, 12mo....1.00

White's Cranberry Culture.
By Joseph J. White, a practical grower. Illustrated, Cloth, 12mo.....1.25

Henderson's Practical Floriculture.
By Peter Henderson. A guide to the successful propagation and cultivation of florists' plants. Beautifully illustrated. New and enlarged edition. Cloth, 12mo..1.50

Barry's Fruit Garden.
By P. Barry. A standard work on fruit and fruit trees. New edition revised up to date. Indispensable to all fruit growers. Illustrated. Cloth, 12mo.....2.00

Husmann's American Grape-Growing and Wine Making.
By George Husmann of California. A recognized authority on the subject. Illustrated. Cloth, 12mo...1.50

Fuller's Grape Culturist.
By A. S. Fuller. Best work on the culture of the hardy grapes. Illustrated. Cloth, 12mo.....1.50

Your Plants.
Plain and Practical Directions for the Treatment of Tender and Hardy Plants in the House and in the Garden. By James Sheehan.....40

Henderson's Handbook of Plants.
A concise dictionary of plants, with instructions on propagation and culture. Cloth, large 8vo.....4.00

The Propagation of Plants.
By Andrew S. Fuller. Describing the process of hybridizing and crossing. Illustrated. Cloth, 12mo..1.50

Fulton's Peach Culture.
The only practical guide to Peach Culture for those who would be successful. By Hon. J. Alexander Fulton, Cloth, 12mo.....1.50

Quinn's Pear Culture for Profit.
How to raise Pears. By P. T. Quinn, Cloth 12mo...1.00

Quince Culture.
By W. W. Meech. Propagation and cultivation, insect enemies, diseases and remedies. Illustrated. Cloth, 12mo.....1.00

Parsons on the Rose.
By Samuel B. Parsons. The propagation, culture and history of the rose. Illustrated. Cloth, 12mo.....1.00

Fuller's Small Fruit Culturist.
By Andrew S. Fuller. The book covers the whole ground of small fruits. Illustrated. Cloth, 12mo.....1.50

Strawberry Culturist.
By Andrew S. Fuller. All information necessary to raise strawberries. Illustrated. Cloth, 12mo.....25

Heinrich's Window Flower Garden.
Personal experiences in Window Gardening. By Julius J. Heinrich. Fully illustrated. Cloth. 12mo.....75

Concerning Lawn Planting.
By Calvert Vaux and Samuel Parsons, Jr. Advancing the standard of Landscape Architecture.....25

Long's Ornamental Gardening for Americans.
Beautifying Homes, Rural Districts and Cemeteries. By Elias A. Long, Landscape Architect. Illustrated. Cloth, 12mo.....2.00

The Dairyman's Manual.
By Henry Stewart. A useful and practical work. Illustrated. Cloth, 12mo.....2.00

Hog-Raising and Pork-Making.
By Rufus Bacon Martin. Valuable suggestions for the business of hog-raising. Paper, 12mo.....40

Stewart's Shepherd's Manual.
It is so plain that one who has never kept sheep, may learn from its pages how to manage a flock successfully. By Henry Stewart. Illustrated.....1.50

Harris on the Pig.
Equally valuable to the farmer who keeps but few pigs, and to the breeder on an extensive scale. By Joseph Harris. Illustrated. Cloth, 12mo.....1.50

The Dogs of Great Britain, America and Other Countries.
Breeding, Training and Management, in Health and Disease. By "Stonehenge." Illustrated. Cloth, 12mo..2.00

Herbert's Hints to Horse-Keepers.
A Complete Manual for Horsemen. By William Herbert (Frank Forester). Illustrated. Cloth, 12mo.....1.75

Sander's Horse Breeding.
The principal of Heredity applied to the business of breeding animals. By J. H. Sanders. Cloth, 12mo...2.00

Quinby's New Bee-Keeping.
The Mysteries of Bee-Keeping Explained. Cloth, 12mo.....1.50

Duck Culture.
Natural and Artifical. By James Rankin. Fully illustrated.....50

Stoddard's An Egg Farm.
By H. H. Stoddard. The management of poultry in large numbers. Illustrated. 12mo. Cloth.....50

Profits in Poultry.
Useful and Ornamental Breeds and their Profitable Management. Illustrated. Cloth, 12mo.....1.00

Canning and Preserving.
By Mrs. S. T. Rorer. Teaching beginners how to can and preserve fruits and vegetables, making marmalades, fruit, butter and jellies, drying fruits and making sirups and catsups, pickling, flavored vinegars, drying herbs, etc.....40

Barn Plans and Outbuildings.
Full of Ideas, Hints, Suggestions and Plans for the Construction of Barns and Outbuildings. Illustrated. Cloth, 12mo.....1.50

Laws' Veterinary Adviser.
A guide to the Prevention and Treatment of Disease in Domestic Animals. By Prof. James Law. Cloth. Crown, 8vo.....3.00

Stewart's Feeding Animals.
By Elliott W. Stewart. The laws of Animal growth, specially applied to rearing and feeding. Illustrated. Cloth, 12mo.....2.00

The American Standard of Perfection.
The recognized standard work on Poultry.....1.00

The Practical Fruit Grower.
By S. T. Maynard. Just what the beginner needs and the successful fruitman practices. Illustrated. Cloth..50

The Family Horse.
By Geo. A. Martin. A practical Manual, full of the most useful information. Illustrated. Cloth, 12mo.....1.00

Stewart's Irrigation for the Farm, Garden, and Orchard.
Farmers can readily appreciate the losses which result from the scarcity of water By Henry Stewart. Illustrated. Cloth, 12mo.....1.50

Mushrooms, How to Grow Them.
The most practical work on the subject and the only book on growing Mushrooms published in America. By Wm. Falconer. Illustrated. Cloth.....1.50

Harris's Talks on Manures.
By Joseph Harris, M. S., author of "Walks and Talks on the Farm," including a chapter by Sir John B. Lawes, of Rothamsted, England. Cloth, 12mo.....1.75

Bommer's Method of Making Manures.
A practical and comprehensive guide. By Geo. Bommer. Paper.....25

High Farming Without Manures.
By George M. Ville. Six Lectures at the Experimental Farm at Vincennes.....25

Keeping One Cow.
A collection of Prize Essays upon the management of a single Milch Cow. Illustrated. Cloth, 12mo.....1.00

SENT FREE. **New Edition of Illustrated Rural Book Catalogue, containing 116 pages, and fully describing upwards of 600 valuable works on Agriculture, Horticulture, Architecture, Horses, Cattle, Game, etc.**
Address

ORANGE JUDD CO., 52 & 54 Lafayette Place, New York.

Contents of this Number.

Agricultural Societies, Suggestions to.....248
Animals, Young, Growth of.....213
Animal Ailments.....238
Apiary, The, in April (A. H. Duff).....220
Bee Stings, Remedies for.....264
BOYS AND GIRLS:
The Easter Cantata (Agnes Carr Sage)...*Illustrated*..229
Some Bright Examples.....229
The Wonders of Respiration (S. H. Platt, M. D.).....230
Fifteen Minutes by a Trout Brook (R. E. H. Lowe) .....4 *Illustrations*..230
Some Curious Easter Customs.....230
A Hint for Reading Clubs.....230
Our Easter Day.....230
A Presidential Puzzle.....*Illustrated*..231
Guy's Arbor Day.....231
Butter Making, Agricultural Student on.....244
Cattle Transportation Restricted.....*Illustrated*..256
Cherries in California (Ninetta Eames)....*Illustrated*..220
Cheeses, Fancy, Manufacture of (Henry Stewart).....212
Chicklings, Raising (Miss E. K. Winans).....207
Chickens, Spring, Care of.....206
Corn, Planting Early.....219
Corn, Shallow Cultivation for (A. G. Chase).....212
Country Life, Trouble with, The.....264
Crops of the World, The.....240
Eggs, Clean.....208
Egg Plants, Raising (E. S. Miller).....220
Farmer, Western, The.....249
Flowering Annuals, Desirable (William Falconer).....216
Fodder Plant, New, A.....2 *Illustrations*..219
From Near and Far.....232
Fruit Trees, Planting on Prairie Soil (C. B. Rockwell)..203
Germicides, Proper Use of, The.....257
Grapevines, Grafting (George Husmann) 3 *Illustrations* 218
Harrowing, Diagonal (Wilder Graham)....*Illustrated*..209
Hawaii and Its Bountiful Resources (Herbert Stanley Renton) .....*Frontispiece and* 4 *Illustrations*..204
Hen, Broody, Coup for.....*Illustrated*..208
Hog, American, The.....252
Horse, Future of, The (Webb Donnell).....210
HOUSEHOLD:
The Mother's Account of Stock (Alice Chittenden)....222
Fighting the Moths (Prudence Rhodes).....222
Correcting Children Before Company (Nellie Burns).222
The Influence of a Pleasant Voice (Ella Rockwood)...222
Keep the Wash Boiler Dry.....222
Easter Egg Doilies.....*Illustrated*..223
A Pretty Veil Case.....*Illustrated*..223
Handsome Crocheted Edge (F. H. Perry) *Illustrated*..223
"King's Daughter" Cosy.....*Illustrated*..223
Scriptural Scrap-Book.....*Illustrated*..223
A Ribbon Easel.....*Illustrated*..223
Watch Pocket.....*Illustrated*..223
The Words of Thy Mouth (Aline Alden) 223
Sponge Bag.....*Illustrated*..224
A Five O'clock Tea Table.....*Illustrated*..224
Serviceable Easter Gifts (May Silvers) 2 *Illustrations* 224
High Tables in the Kitchen (Ella R. Wood).....224
A Homemade Refrigerator (Hollister Sage)..2 *Illus*..224
Bric-a-Brac Duster.....*Illustrated*..225
A Serviceable Chandelier Ornament (Harriette P. Richardson).....225
Paper Carpets.....225
Variety in Table Beverages.....225
A Needlebook and Emery Bag.....2 *Illustrations*..225
For Baby's Comfort (Dorothy Lincoln)...*Illustrated*..225
Easter Attire.....226
Every Day Dishes.....226
Worth Remembering.....226
Happy Hearts Polka.....*Full Page of Music*..227
Manures, Different, Proper Application and Distribution of, The (J. J. Willis).....202
Matters of Business.....260
Meadow Foxtail.....204
Non-Farmer, Increase of The.....259
Note and Comment.....259
Orchard Grass, Killing.....212
Pasturing, Spring, Caution in, (E. R. Flint).....202
Peas, Green, for the Garden (A. Charles).....220
Plant Protectors, Proper (T. Payson) ...2 *Illustrations*..209
Plowing Wet Soil.....219
Potatoes, Seed, Growing (E. S. Teagarden).....203
Poultry House, Convenient, A (John W. Laughey) .....2 *Illustrations*..208
Poultry Pasture.....207
Poultry, Pneumatic Fountain for .....3 *Illustrations*..208
Quince Rust, The (Dr. B. D. Halsted)...2 *Illustrations*..213
Secretary of Agriculture, New, The.....*Illustrated*..242
Short Furrows (Marion Rambo).....210
Stamboul and Nancy Lee (L. F. Cagwin) 2 *Illustrations* 211
Strawberry Culture in the Northwest (C. L. Hill).....216
Sugar Industry, Cuban, The (I. N. Ford) 3 *Illustrations*..214
Tire, Wide, for Farm Wagons.....218
Tobacco Culture (James K. Reeve).....203
Topics of the Times.....256
Turkey, Brush, The (Franklane L. Sewell).*Illustrated*..207
Turkeys, Raising for Market (Ella Rockwood).....206
Warbles or Wolves in Cattle (Dr. Hooper Curtice) .....10 *Illustrations*..217
Weed Seeds, One Hundred Kinds of... ....*Illustrated*..264
Wool-Box, Convenient, A (John Brumback)...2 *Illus*..209
Worthy Example, A (C. L. Allen).....203

The records show this Threshing-machine to be the easiest running and the greatest grain saver of all. Requires only about 1¼ miles travel per hour. For full description, and for the best Straw-preserving Rye-threshers, Clover-hullers, Fanning-mills, Feed-mills, Circular-saw Machines, Land-rollers and Dog-powers, send for **Fearless Catalogue.** For Fodder-cutters, Carriers and Drag-saw Machines, and for information showing "Why Ensilage Pays," send for **Ensilage Catalogue.** Address, **HIRAM HARDER,** Cobleskill, N. Y.

JOSEPH GILLOTT'S
STEEL PENS.
GOLD MEDAL, PARIS EXPOSITION, 1889.
THE MOST PERFECT OF PENS.

LIMBS Artificial.
Crutches, &c. Best Leg, Wood or Rubber Foot **$50**
Catalogue Free. State particulars.
RUPTURE,
Cause, treatment and **CURE.** Book mailed **FREE.**
ELASTIC STOCKINGS, &c.
GEO. R. FULLER, U. S. Govt. Mnf'r, Dept. No. 14. **ROCHESTER, N. Y.**

HAPPY HOMES
By using the **BEVERIDGE COOKER.** Latest and simplest cooking utensil. No odor. **Food can't burn.** Saves labor and fuel. Cooks on oil, gas or coal stove. **Agents wanted,** either sex. **Big pay.** A lady sold **1730** in one town. Address, for terms, **W. E. BEVERIDGE, Baltimore, Md.**

(PATENT ALLOWED.)
Pat. July 28, 1891.

RUPTURE CURED.
Worn Night and Day. Perfect Comfort. Holds the worst rupture with ease. Has a new Pad which can be made larger or smaller by the patient, Sent by mail everywhere. Illustrated catalogue and rules for self-measurement sent securely sealed. **G. V. House Mfg. Co.,** 744 Broadway, N. Y. City.

Wall Paper Samples FREE
Send 8c. for postage, deduct it when ordering.
Goods all guaranteed to HANG WELL and WEAR EQUAL TO ANY.
Good Papers, - 2, 3, 4c. per Roll.
Gilt " - 4, 5, 6c. "
Embossed Gilts, - 8, 10c. and up.
9-inch BORDERS to Match, 1c. Yd.
18 " " " 3c. "
F. H. CADY, 315 High St., Providence, R. I.
We guarantee to please you or refund postage.

PAINSFOE
THE HOUSEHOLD REMEDY FOR PAIN.
Mild, effective, contains no opium. Cures Headache, Neuralgia, Sciatica, La Grippe, Rheumatism, and **all** bodily pains. Sample and book of information sent FREE. Box containing **75 doses—Price, 50c** —at the druggists or by mail.
PAINSFOE CHEMICAL CO., 37 College Place. Direct to Post Office Box 1689, New York.

AMERICAN AGRICULTURIST

—PUBLISHED BY THE—

ORANGE JUDD COMPANY.

A CORPORATION ORGANIZED UNDER THE LAWS OF THE STATE OF NEW YORK.

Main Offices, 52 and 54 Lafayette Place, New York, N. Y.

WESTERN OFFICE, 504 THE ROOKERY, CHICAGO, ILL.

The Western Office is for the accommodation of advertisers and subscribers in that section. All communications should be sent to the Main Office, New York.

Entered at New York Post office as mail matter of second class.

Terms of Subscription in the United States and British Provinces.

The American Agriculturist is published monthly and is mailed in time to reach subscribers on or before the first of each month.

Terms.—Single subscriptions $1.50 per year or 75 cents for six months, payable in advance. Clubs of five or more $1.00 per year, or 50 cents for six months.

A FREE copy for every club of five for either term.

Remittances.—Money for subscriptions can be sent by postal note, express or post-office money order, registered letter, check or draft; postage stamps accepted for fractional parts of a dollar.

Expiration of Subscriptions.—The date (usually abbreviated) following each subscriber's name which appears on the magazine or wrapper shows to what time your subscription has been paid. Thus: Jan. '93, means that subscription is paid up to January 1, 1893; Feb. '93, to February 1, 1893, and so on.

Renewals.—Six weeks are required after sending money before the date which shows to what time subscription is paid, and which answers for a receipt can be changed. No other receipt is sent unless requested. If at the end of six weeks date is unchanged or any error is noticed subscribers will confer a favor by notifying us.

Discontinuances.—Responsible subscribers will continue to receive this magazine until the publishers are notified by letter to discontinue, when all arrearages must be paid. If you do not wish the magazine continued for another year after your subscription has expired, you should then notify us to discontinue it.

Change of address.—When a change of address is desired both the old and the new address should be given.

New Subscriptions can commence at any time during the year and with any number desired.

Canvassers wanted in every town to solicit subscriptions. Terms sent on application.

Rates to Foreign Countries.

The yearly subscription of the AMERICAN AGRICULTURIST in shillings and pence to subscribers in foreign countries is as follows:

	s.	d.	U.S. cur
Africa except Egypt, Liberia and Congo, Natal and Transvaal	10	3	$2.46
China	11	3	2.70
Madagascar	10	3	2.46
St. Helena	10	3	2.46

Countries in the Universal Postal Union, including Newfoundland, Egypt, Liberia, Congo, Natal, and Transvaal, and all others not mentioned above, 7s. 9d.; United States currency, $1.86.

In clubs of five or more a discount of 50 cents, or two shillings one penny, is allowed on each subscription.

Merchandise.—(Premium articles), except printed matter is unmailable to Foreign Countries.

Books offered by us as premiums in connection with the AMERICAN AGRICULTURIST are mailable to all countries in the Postal Union.

Postage 36 cents. or 1s. 6d., for the AMERICAN AGRICULTURIST for one year must be added to the advertised price of same when taken in combination with a premium book in all Postal Union countries.

Remit by post-office money order, payable to AMERICAN AGRICULTURIST, at New York General Post Office, and inclose the money order with your letter to avoid delay and possible loss. Drafts on New York are acceptable in the absence of any other form of remittance.

Foreign Agencies.

The following Agents are authorized to accept subscriptions and advertising orders:

KEGAN PAUL, TRENCH, TRUBNER & CO., 57 Ludgate Hill, London, England.
JOHN IRELAND, Pietermaritzburg, Natal, South Africa.
JOHN H. EVERY, Dunedin, Otago, New Zealand.
WM. MADDOCK, 361 George street, Sydney, New South Wales, South Australia.
WM. HOPKINS, Rockhampton, Queensland, Australia.

Advertising Rates.

Ordinary Pages, **$1.00** per line (agate), each insertion.
Last Page, and Third Cover Page, **$1.25** per line.
Second Cover Page, **$1.50** per line.
Page next to Reading and Last Cover Page, **$2.00** per line.
Reading notices, set in nonpareil type, to go under the heading "Business Notices," or at the end of a column of reading with "adv." affixed, $2 per line count.
No advertisement taken for less than **$3.00** each insertion. Fourteen agate lines make one inch.

Discounts.

On ten (10) lines and upwards, 3 months, five per cent.; 6 months, ten per cent.; 9 months, fifteen per cent.; 12 months, one year, twenty per cent.
On forty (40) lines and upwards, 3 months, ten per cent.; 6 months, fifteen per cent.; 9 months, twenty per cent.; 12 months, one year, twenty-five per cent.
Discount on Space Contracts.—100 lines, ten per cent.; 250 lines, fifteen per cent.; 500 lines, twenty-five per cent; 1,000 lines, thirty per cent.

—o—

Direct all Business Communications pertaining to Subscriptions and Advertising to

AMERICAN AGRICULTURIST,
52 and 54 Lafayette Place, New York.